THE RESTORATION INITIATIVE

2021 YEAR IN REVIEW

THE RESTORATION INITIATIVE

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Back cover photo: The forested gorges in Mt.Kulal Landscapes, Kenya © Elijah Mboko/FAO KE

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Mukogodo Forest - Kenya. Photo credit: © Luis Tato.

FOREWORD

POSITIONING THE RESTORATION INITIATIVE IN THE GLOBAL RESTORATION MOVEMENT

2021 marked the first year of the UN Decade on Ecosystem Restoration and renewed efforts are lining up to fulfil billions of hectares of restoration commitments. This is all thanks to the mobilization of a multiplicity of actors, each of whom has a clear role to play in addressing bottlenecks and accelerating implementation. The Restoration Initiative (TRI), in its third year of implementation, is part of this mosaic of action.

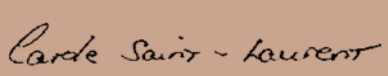
Progress in TRI – across the 10 countries it supports – can be measured at multiple scales: from the project landscapes where restoration interventions are resuming after hiatus and delays due to COVID-19, to sub-national and national policies and stakeholders, targeted by project awareness-raising and support campaigns.

The TRI community has also seen the global community of restoration practitioners and other stakeholders working to advance the restoration agenda. TRI is engaged across all these levels through participation in relevant global events and fora, and through the development and sharing of knowledge products and tools.

Countries have demonstrated high adaptability in the face of rapidly changing realities. Over the last year we saw propagation of hundreds of thousands of seedlings to restore land and mangrove areas with different species, in order to address economic, social and biodiversity needs. This showed that real restoration on the ground is occurring and will continue to be scaled up through the next years of country implementation. Adoption of policies and government management plans to restore ecosystems and empower local communities, as well as the development of bankable proposals and investment in seed funding for local entrepreneurs, are pillars of the long-term sustainability of the programme's impacts.

Global support to country teams continued albeit with travel restrictions, making use of online and hybrid formats when possible. Thanks to this, there has been a spike in online training sessions, webinars and exchanges among the TRI community to discuss not only progress but to enhance capacities in monitoring, genetic diversity, policy, finance and partnerships. In 2021, the first cohort of restoration ecopreneurs under the Restoration Factory received mentorship to develop business plans in 8 of the 11 TRI country projects. In terms of biodiversity outcomes, the Species Threat Abatement Restoration metric was applied in 4 countries to identify the actions needed to reduce risk directly connected to threatened or near-threatened species present in the TRI projects' geographical scope, thus informing critical policy decisions for the future of biodiversity in these areas.

The TRI community has much to offer to the global restoration community to show the how-to of restoration. The lessons learned have already set this program for success. We look forward to sharing this with you in this Year in Review and in future contributions to the UN Decade on Ecosystem Restoration. We hope you find this work both inspiring and useful.



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Head, Forest and Grasslands Team
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FAO

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Ecosystems Division Director
UNEP

COALITION OF PARTNERS

The Restoration Initiative (TRI) unites ten Asian and African countries and three Global Environment Facility agencies – the International Union for Conservation of Nature, the Food and Agriculture Organization of the United Nations, and the United Nations Environment Programme – along with national and local governments and a host of strategic partners in working to overcome existing barriers to restoration and restore degraded landscapes at scale, in support of the Bonn Challenge.

FOUNDING PARTNERS

TRI is supported by the **Global Environment Facility (GEF)**. The initiative contributes to the GEF's commitment to assist developing countries in meeting the objectives of multilateral environmental agreements, including those on combating land degradation, mitigating climate change and halting biodiversity loss. GEF support for TRI is also enabling partner countries to deliver on commitments made to larger restoration initiatives, including the Bonn Challenge and AFR 100.

The International Union for Conservation of Nature (IUCN) serves as lead agency for TRI, providing programmatic coordination, integration, and harmonization of work across the 11 country projects, agencies, and partners. IUCN is also leading support for partnering countries in strengthening the enabling in-country policy environment for forest landscape restoration. IUCN is the implementing agency for four TRI national projects in Cameroon, China, Guinea-Bissau and Myanmar.

The Food and Agriculture Organization of the United Nations (FAO) leads support for partnering countries in the capture and dissemination of best practices on forest landscape restoration and in capacity building on a wide range of tools and topics integral to this subject. FAO is the implementing agency for five TRI national projects in the Central African Republic, the Democratic Republic of the Congo, Kenya's arid and semi-arid lands, Pakistan, and Sao Tome and Principe.

The United Nations Environment Programme (UNEP), through their UN Environment Finance Initiative, a 25-year public–private collaboration with a network of more than 300 financial institutions, supports partnering countries through technical assistance and capital markets connections in efforts to mobilize and catalyse domestic and external funding for large-scale restoration. UNEP is the implementing agency for two TRI national projects in the Kenya Tana Delta and the United Republic of Tanzania.

EXECUTING AND GOVERNMENT PARTNERS

Nature Kenya (Kenya, Tana Delta)

Kenya Forestry Research Institute (Kenya, arid and semi-arid lands)

The International Network for Bamboo and Rattan (Cameroon)

Institute for Biodiversity and Protected Areas (Guinea-Bissau)

Ministry of Environment and Sustainable Development (Democratic Republic of the Congo)

Ministry of Agriculture and Rural Development, through the Directorate of Forests (Sao Tome and Principe)

Ministry of Natural Resources and Environmental Conservation, Forest Department (Myanmar)

Ministry of Climate Change (Pakistan)

Vice-President Office in partnership with the National Environment Management Council (United Republic of Tanzania)

Ministry of Environment, Sustainable Development, Water, Forestry, Hunting and Fisheries (Central African Republic)

National Forestry and Grassland Administration (People's Republic of China)

ADDITIONAL PARTNERS

The Alliance – Bioversity International, (now together with the International Center for Tropical Agriculture (CIAT), The Alliance) provides technical support through the development of training modules and the facilitation of capacity development for national TRI project teams on forest genetic resources for forest landscape restoration.

Newcastle University – Researchers at Newcastle University, in the United Kingdom of Great Britain and Northern Ireland, together with IUCN, are supporting development and piloting of the Species Threat Abatement and Recovery (STAR) metric – a new tool providing practitioners with enhanced information on the impacts of restoration actions on threatened biodiversity. The use of STAR is being piloted in five TRI projects: Cameroon, Central African Republic, Kenya (both projects) and Myanmar.

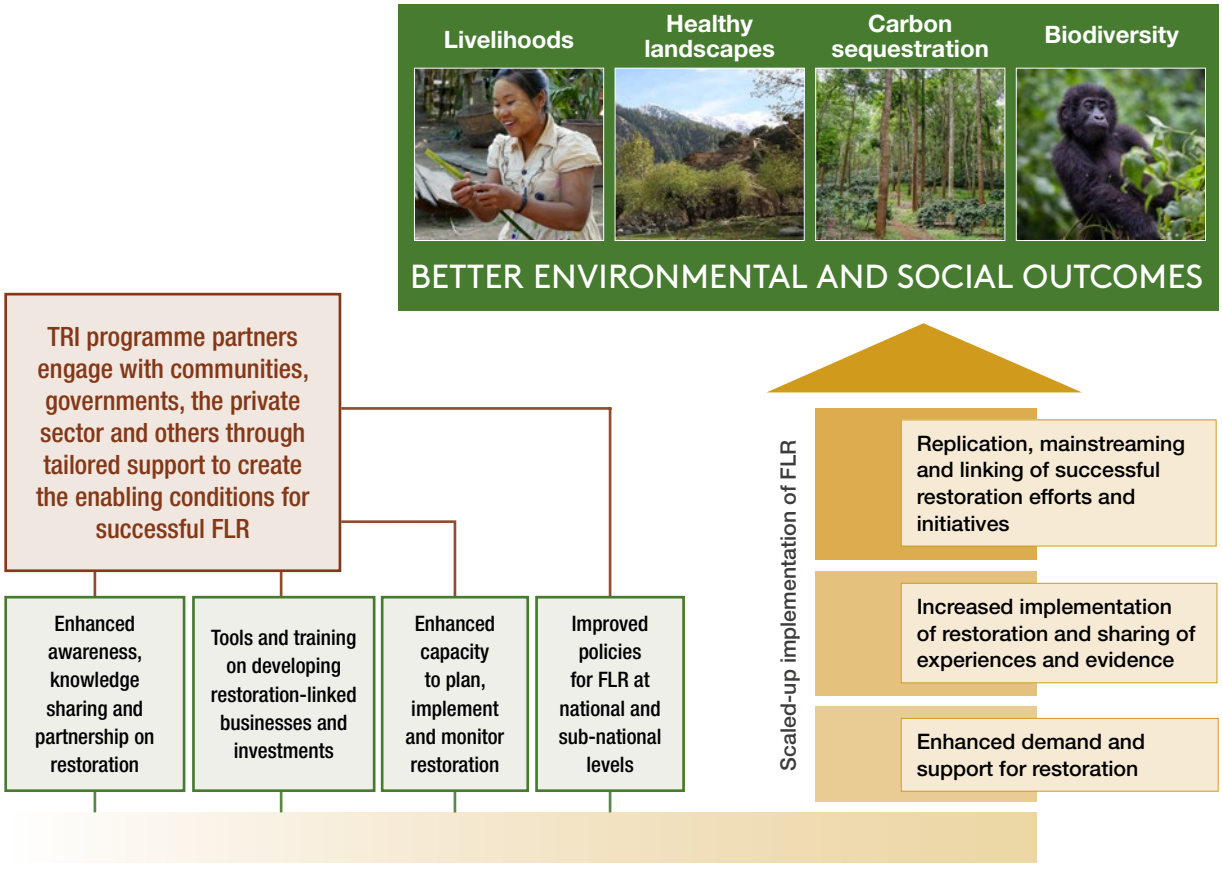
WRI – The World Resources Institute has supported TRI national projects in the Central African Republic, the Democratic Republic of the Congo and Kenya by conducting assessments on restoration needs and opportunities using the Restoration Opportunities Assessment Methodology.

PROGRAMME APPROACH

Land degradation is one of the defining challenges of our time. Global estimates suggest that nearly 2 billion ha of agricultural land, pasture, forest and woodland are degraded.[1] Restoration of deforested and degraded lands is essential to addressing global challenges including climate change, biodiversity loss, and the need for healthy sustainable food systems and a thriving economy.

TRI is designed to address key and common barriers to expanding and scaling-up restoration. The programmatic approach leverages each partner agency's strengths and ongoing work on forest landscape restoration FLR while providing extensive opportunities for South-South knowledge capture and sharing.

THE RESTORATION INITIATIVE APPROACH

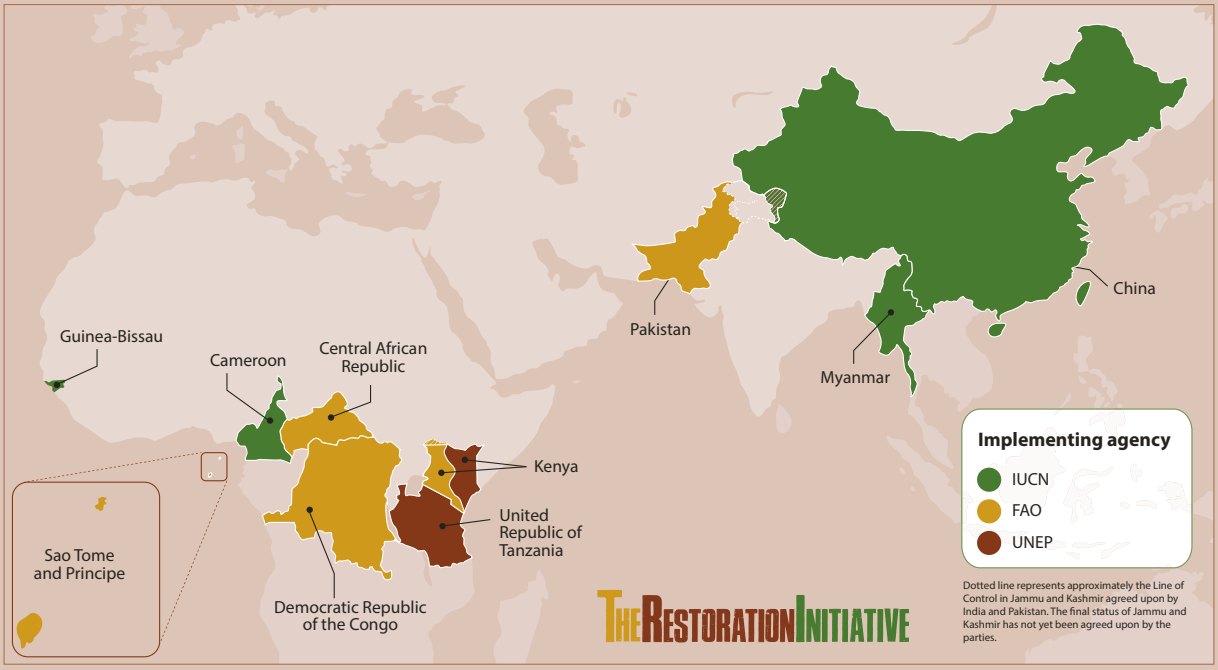

Livelihoods
Healthy landscapes
Carbon sequestration
Biodiversity
BETTER ENVIRONMENTAL AND SOCIAL OUTCOMES
TRI programme partners engage with communities, governments, the private sector and others through tailored support to create the enabling conditions for successful FLR
Enhanced awareness, knowledge sharing and partnership on restoration
Tools and training on developing restoration-linked businesses and investments
Enhanced capacity to plan, implement and monitor restoration
Improved policies for FLR at national and sub-national levels
Scaled-up implementation of FLR
Replication, mainstreaming and linking of successful restoration efforts and initiatives
Increased implementation of restoration and sharing of experiences and evidence
Enhanced demand and support for restoration

1 Gibbs, H.K. and Salmon, J.M. 2015. Mapping the world's degraded lands. *Applied Geography*, issue 57: 75-81 https://doi.org/10.1016/j.apgeog.2014.11.024

KEY PROGRAMMATIC SUPPORT

- Annual knowledge-sharing workshops and events
- Online community of practice and training opportunities
- Tailored support and training focused on mobilizing investment into FLR
- Development and piloting of new tools and approaches for restoration

TRI PROJECTS


China
Pakistan
Myanmar
Guinea-Bissau
Cameroon
Central African Republic
Kenya
United Republic of Tanzania
Democratic Republic of the Congo
Sao Tome and Principe
Implementing agency
IUCN
FAO
UNEP
THE RESTORATION INITIATIVE
Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Freepick, 2021. Earth-map-linear-composition. Available at https://www.freepik.com/free-vector/earth-map-linear-composition_9386670.htm#page=1&query=world%20map&position=1&from_view=search Accessed on 7 October 2021. Modified by author.

PROGRAMME FUNDING

Co-funding
201 million

GEF grants
54 million

PROGRAM-LEVEL TARGETS

Under restoration
483 245 ha

Under improved management
754 451 ha

GHG mitigation
30.4 million tCO2eq

Number of direct beneficiaries
287 239 people

PROGRAMME UPDATE

PROGRESS UPDATE ON IMPLEMENTATION OF THE RESTORATION INITIATIVE

2021 marks the completion of The Restoration Initiative's (TRI) third full year of implementation. Despite challenges lingering from the COVID-19 global pandemic, 2021 was a year of encouraging progress. As stay-at-home work requirements and other restrictions were lifted, project participants were able to return to the field, using the analyses, policy recommendations and landscape restoration and management plans developed in 2020 to accelerate restoration actions. In addition, TRI's global support partners launched an initiative that will help close the investment gap for young enterprises that incorporate nature-based solutions (NbS), and will continue to advance forest landscape restoration (FLR) knowledge-sharing and capacity-building initiatives for TRI partners and the wider restoration community. In many ways, 2021 was a year of transitions, but it also presented a fresh start for continuing on-the-ground work with renewed vigour as the world collectively transitioned to the new normal.

Helping local farmers to build capacity in plants grafting for the production of improved variety of NTFPs. Photo credit: © Fogoh John Muafor

PROGRAMME-LEVEL HIGHLIGHTS AND PROGRESS IN 2021

Development and piloting of the Species Threat Abatement and Recovery metric

2021 was a year of progress in developing the Species Threat Abatement and Recovery (STAR) metric, a new tool that lets practitioners assess and compare the benefits of different site-based restoration or conservation measures for the conservation of threatened species. The tool utilizes data from IUCN's *Red List of Threatened Species*, which includes data on over 142 000 threatened species worldwide. In 2021, STAR assessments were developed for TRI project landscapes in Cameroon and Kenya using higher-resolution data and a new approach to identifying habitats for threatened species. The new TRI-supported STAR assessments are not only helping to inform the design of restoration and conservation measures at these different project sites, but are also providing valuable insights on how to enhance and disseminate this tool for the wider conservation and restoration community. The methodology for STAR was published in 2021 in the journal *Nature Ecology & Evolution*.

The Restoration Initiative country project webinar series

A three-day webinar series accompanied by virtual discussions was held to connect TRI country projects and to share insights and challenges encountered during 2021. Each country presented its approach to FLR planning and implementation and provided a project-level overview of progress to date while bringing new ideas to the table. This show-and-tell event was the first since the COVID-19 global pandemic and provided an opportunity to recognize and support the restoration approaches and thinking among TRI's national partners.

The Restoration Initiative Restoration Factory strengthens capacities for mobilizing investment for sustainable businesses

The TRI Restoration Factory welcomed its first cohort of 13 businesses in April 2021. The six-month mentorship programme provided entrepreneurs with personalized guidance in preparing restoration-based investment proposals and helped to scale up their business models built around sustainable management. Out of the 11 TRI country projects, 9 participated and a review of insights and lessons is being prepared to identify potential improvements and prepare knowledge products for subsequent cohorts.

The Restoration Initiative programme featured at IUCN World Conservation Congress

In September 2021, the TRI programme was highlighted in a special event that aimed to raise the visibility of the FLR process and showcase insights from TRI's on-the-ground work in overcoming restoration barriers. Panellists included ministers from two TRI programme countries – Mohamed Elmi, Vice Minister of Environment and Forestry for Kenya, and Malik Amin Aslam, Federal Minister for Pakistan and Adviser to the Prime Minister for Climate Change – and the CEO of the Global Environment Facility, Carlos Manuel Rodriguez. The speakers emphasized the importance of putting local communities at the heart of restoration efforts, ensuring restoration interventions are tailored to the unique needs of particular landscapes and communities, and strengthening collaboration with local and national governments. Representatives from TRI's global support partners, the International Union for Conservation of Nature (IUCN), the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Environment Programme (UNEP) also participated as part of the panel.

The Restoration Initiative Myanmar project suspended following military coup

In November 2021, the TRI Myanmar project was effectively suspended for two years due to a military coup in the country in February. With the military in charge and having declared a year-long state of emergency, TRI global support partners concluded the political conditions in the Southeast Asian country are an impediment to the TRI Myanmar project's restoration plans and activities. The political climate in the country will continue to be monitored to determine at what point TRI operations in the country may be safely allowed to continue.

PROJECT-LEVEL HIGHLIGHTS AND PROGRESS IN 2021

Cameroon

The TRI Cameroon project propagated over 105 000 seedlings – 47 000 bamboo, 54 000 non-timber forest products (NTFPs) and 4 000 mangroves – to be used in restoring the Mbalmayo, Akomnyada, Dizangue, Mouanko, Makilinguaï and Aïssa-Hardé areas. These propagated tree varieties also supported the restoration of 250 ha in the Douala Edea (68 ha), Mbalmayo (110 ha) and Waza (72 ha) landscapes.

Area of land under restoration
249.75 ha

Area of land under improved practices
45 ha

Central African Republic

The TRI Central African Republic (CAR) project identified restoration perimeters covering 500 ha across five villages in the Pissa area with active participation from community members, laying the foundation for on-the-ground restoration activities, such as agroforestry or assisted natural regeneration. Twenty thousand eight hundred essessang and ayous seedlings were planted by the communities over 26 ha (2.5 ha in Bombé, 4 ha in Boyama, 5 ha in Boyali, 6.5 ha in Pissa and 8 ha in Bongombé).

Area of land under restoration
500 ha (Potential)

Area of land under improved practices
6 000 ha (Potential)

China

The TRI China project established and commenced individual five-year FLR plans for seven state forest farms (SFFs). These FLR plans are tailored around improving ecosystem services and delivering socioecological benefits to local communities. Following their incorporation in 2021, field activities, such as reforestation, forest thinning and ecological service monitoring have been implemented at each pilot site.

Area of land under restoration
157 095 ha

Area of land under improved practices
213 314 ha

Democratic Republic of the Congo

The TRI Democratic Republic of the Congo (DRC) project presented documents on the provincial FLR strategy and the results of the Restoration Opportunities Assessment Methodology (ROAM) at both the provincial and national levels. Additionally, the project, together with help from partners, has begun developing microprojects promoting FLR interventions and has set up 90 Dimitra Clubs to address community-led challenges across the two chiefdoms: 50 in Ngweshe and 40 in Kabare.

Area of land under restoration
7 352 ha (Potential)

Area of land under improved practices
No information available

Guinea-Bissau

The TRI Guinea-Bissau project together with ten partner villages planted nearly 168 000 mangrove seedlings on 82 ha. This involved the engagement of more than 1 300 people. The project also helped restore 287 ha of fields for mangrove rice cultivation, which will provide food and a source of income for over 400 families.

Area of land under restoration
749.5 ha
(includes 294.2 ha of restored rice fields)

Area of land under improved practices
297.7 ha
(includes the same 294.2 ha under sustainable management)

Kenya arid and semi-arid lands

The TRI Kenya arid and semi-arid lands (ASAL) project revised and launched an improved management plan for 51 436 ha of the Mount Kulal ecosystem using the results of the completed ROAM. The management plan covers two project sites – the Mount Kulal and the Mukogodo areas – and aims to improve biodiversity conservation and wildlife habitat management in the forested area through minimal impact ecotourism, such as hiking and bird watching, through close monitoring of resource extraction and the ongoing maintenance of nature trails. Three thousand seven hundred microcatchment bands were also put in place, covering an area of 46 ha.

Area of land under restoration
110.6 ha

Area of land under improved practices
43 670 ha (Leparua and Ilngwesi conservancies)
51 436 ha (Potential) (Mount Kulal ecosystem)

Kenya Tana delta

The TRI Kenya Tana delta project completed the ROAM process in the Tana River delta. The assessment showed 123 000 ha of degraded land, which included rangelands (65 000 ha), croplands (27 000 ha), wetlands (26 500 ha) and forests (6 500 ha), which stand to benefit from FLR interventions. Some 99 700 indigenous tree seedlings were grown by 13 community groups and the Kenya Forest Service. The project together with Nature Kenya helped establish the governance structure of the Tana Delta Green Heart initiative. The Tana Green Heart secretariat is now operational.

Area of land under restoration
6 000 ha

Area of land under improved practices
130 000

Myanmar

The TRI Myanmar project was effectively suspended in November 2021 for two years following a military coup that took place in early February. Progress to date included completing the ROAM process, which zeroed in on 29 areas covering just under 292 000 ha for FLR, and the preparation of a proposal on payments for ecosystem services (PES) to improve management of the critically important Thapandzik watershed. TRI global support partners will continue monitoring the political climate in the country to determine at what point restoration operations in the country may be safely allowed to continue.

Area of land under restoration
291 841 ha (Potential)

Area of land under improved practices
No information available

Mukogodo Forest - Kenya. Photo credit: © Luis Tato.

Pakistan

The TRI Pakistan project set up two chilgoza pine nut processing units in two districts to empower chilgoza forest communities, enhance their income by increasing the shelf-life of the commodity, create alternative job opportunities, especially for women, and to involve local communities in chilgoza-related business, trade and local entrepreneurship. The project also provided 300 chilgoza harvesting toolkits to promote the sustainable and safe collection of pine nuts, while bringing 345 ha of land under restoration.

Area of land under restoration
2 805.87 ha
(2 153 ha under assisted natural regeneration and 652.87 ha under agroforestry)

Area of land under improved practices
345.04 ha (320.87 ha and 24.17 ha block plantation)
26 000 ha (potential in Sherani District)

Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

United Republic of Tanzania

The TRI United Republic of Tanzania project is set to begin vital restoration work across the Great Ruaha and Lake Rukwa landscapes in 2022. The planned restoration of 110 000 ha, of which 22 755 ha are restored and 87 245 ha are put under sustainable management, is expected to benefit at least 100 000 households.

Area of land under restoration
0 ha

Area of land under improved practices
0 ha

Sao Tome and Principe

The TRI Sao Tome and Principe (STP) project's work in 2021 follows in a similar vein. The TRI STP project provided USD 87 000 in funding to seven sustainable small- to medium-sized bankable initiatives. The project not only helps close the investment gap but provides e-learning and online coaching sessions to strengthen the initiatives' overall profitability. Generation restoration's entrepreneurial minds are actively supported as they build businesses and create new value chains.

Area of land under restoration
0 ha

Area of land under improved practices
0 ha

AN ENTREPRENEUR'S EXPERIENCE

FEATURED STORY

The role of finance in enabling sustainable development

Entrepreneur Bastien Loloum, a participant in the UNEP-founded Restoration Factory initiative, provides a business's perspective on finance for nature, highlighting challenges and presenting "ecosystemic" solutions.

By Fiona Cromarty

It is well established by the Intergovernmental Panel on Climate Change that economic development has been a driver of increased resource use and environmental damage, and human activities are at the root of the climate crisis. Although this statement may be alarming, it presents an opportunity for humanity to re-evaluate "business-as-usual" and take action to meet the biodiversity, climate change and land restoration ambitions set by the 1992 Rio Conventions.

A sustainable relationship between the natural world and humankind requires immediate global action to align social and economic systems with the Sustainable Development Goals and commitments under the Paris Agreement and international biodiversity frameworks. Yet, there is a gap in the current level of finance supporting this transformative shift: investments in nature based solutions (NbS) need to triple by 2030 according to the UNEP *State of finance for nature report*.[2] The Restoration Factory[3], an

Restored and productive landscape. Photo credit: © Delicias das Ilhas, 2022.

2 UNEP - UN Environment Programme. 2022. Accelerating Sustainable Land-Use Investments for People and Planet. [online] Available at: https://www.unep.org/explore-topics/forests/what-we-do/accelerating-sustainable-land-use-investments-people-and-planet [Accessed 18 July 2022].

3 Ibid.

initiative founded by the UNEP Finance Initiative (under Economy division) and the Climate Finance Unit (Ecosystems division),[4] FAO and IUCN is helping to address this finance gap by supporting the establishment of NbS-focused businesses.

Launched in March 2021, the Restoration Factory initiative guides entrepreneurs through different stages of their business venture for six months. To receive mentorship from the Restoration Factory, each entrepreneur's business plan must incorporate local impacts on landscape restoration, biodiversity loss and job creation. With the Restoration Factory's advisement, business developers can enhance their company's ability to assess the business case, build capacity, access the market and raise capital through grants and public or private investments. In this way, the Restoration Factory initiative advances sustainable consumption and production, and addresses environmental degradation issues that contribute to the triple planetary crisis through a value-chain approach. To date, the Restoration Factory's private sector mentors have guided a first cohort of entrepreneur-mentees through the training programme on business discovery.

THE STORY OF DELICIAS DAS ILHAS[5]

One of the 13 businesses that participated in the first cohort of the Restoration Factory, provides a real-world example of how businesses can group development with ecological sustainability through reducing business-driven deforestation. Their experiences also offer insights into the social and economic systemic shifts necessary to overcome challenges associated with scaling NbS projects.

Bastien Loloum moved from France to the African island of STP in 2005. In 2009 he founded Delicias das Ilhas – or Island Delights in English.

Delicias das Ilhas is a company specializing in the manufacture and sale of lesser-known and locally processed goods, including homemade sweets, spirits, spices, teas, soaps and dehydrated tropical fruits without additives, preservatives or sugar. Sale and use of these products supports restoration efforts and job creation by sourcing local ingredients that are certified organic, Fairtrade and in line with STP's environmental forest-positive conservation efforts.

As Delicias das Ilhas developed over the years, so did a multitude of potentially crippling challenges. Loloum faced "poor infrastructure, unqualified labour, high costs of insularity and also lack of funding, particularly at local banks." Available financial mechanisms offered loans with interest rates that were as high as 25 per cent due to the high risks and low returns associated with the business model. These challenges in obtaining funding are not unique when starting a small business with a focus on restoration in a rural environment. Loloum states that "risk is always a factor that investors will look into, particularly if it is an exotic destination, like Sao Tome and Principe."

Delicias das Ilhas was gradually able to secure assets by soliciting help from non-governmental organizations (NGOs). However, this approach to securing funding is not without its flaws, Loloum notes that "NGO-supported programmes lack coordination"

4 UN Environment. (2021). Accelerating sustainable land-use investments for people and planet. UNEP. Retrieved August 2, 2022, from https://www.unep.org/explore-topics/forests/what-we-do/accelerating-sustainable-land-use-investments-people-and-planet

5 Delicia das Ilhas. (2018). Delicias das Ilhas. Retrieved August 2, 2022, from https://deliciasdasilhas.weebly.com/store/c1/Featured_Products.html

and that project durations are "very often not compatible with business dynamics." These programmes "have little capacity to leverage the economy and business in general" to facilitate the growth of NbS initiatives due to the small envelopes at stake. He claims they usually range between USD 5 000 and USD 10 000 and target very tiny business ideas. The challenges that Delicias das Ilhas faced in business growth and securing financial stability coupled with the severity of the COVID-19 pandemic forced a re-evaluation of the business itself.

As Loloum was looking for help in structuring ideas at the local FAO office, he discovered the Restoration Factory[6] programme. Through the support of the Restoration Factory's dedicated mentors, Delicias das Ilhas had support and guidance in identifying the transition they had to make. This transition required higher investment needs that will produce larger returns to scale up the business. Loloum states, "It was during the Restoration Factory that eventually we came to the conclusion that we needed to add more value to our products – transition from low investments, low risk, low margins, to high investments, high risk, better margins, with more specific products at a higher value." With support from the factory's mentors, Delicias das Ilhas shifted their business model and financial projections to target the foreign market with specialized and highly valued items, instead of the wide variety of products they were initially marketing to the local tourists in STP. This shift is an effort to overcome the frequent and common financial barriers and secure the company's impact plan, business model and viability and overall financial projections.

The support received by Loloum through the Restoration Factory was strengthened by a contribution of a grant of approximately EUR 8 000 for the purchase and set-up of a small distillation unit for essential oils and hydrolates – one of the seven grants awarded by TRI STP to small- and medium-sized enterprises and NGOs in the framework of its "bankable projects" working line.

Delicias das Ilhas' journey demonstrates the barriers that NbS-related businesses can have in obtaining sufficient funding, which is a first-hand example of the need to mobilize additional finance to support and scale up nature-based projects.

Loloum presents an "ecosystemic" approach as a solution to facilitate finance for nature

In a panel discussion with the European Investment Bank and UNEP, Loloum urges an "ecosystemic approach" as a key aspect to enabling finance for NbS projects. This requires recognition of the sociopolitical, economic and environmental ecosystems as interdependent actors within the larger market, and these systems need to work collaboratively to enable change.

Loloum clarifies, "An ecosystem is composed of many small elements that really come in together to make an impact. So, let's look at the smaller elements within the ecosystems, how we can support them individually but always with the ecosystem in mind."

Finance is one small part of this larger system, and it can serve as a catalyst to addressing the triple planetary crisis – the interlinked and cascading effects of climate change, biodiversity loss and pollution.

As Loloum demonstrates, businesses that have restoration objectives often have high risks with low returns, creating barriers for

6 UNEP. (2022). Restoration factory program. Bridge for Billions. Retrieved August 2, 2022, from https://programs.bridgeforbillions.org/restoration-factory-program/

prospective investors. Thus, there is a need to better map out the marketplace for NbS and restoration ventures to increase the efficiency of investment strategies and reduce risks in the value chain. According to the recent report titled *State of finance for nature*,[7] financial organizations, investors, businesses and government agencies can support this shift by standardizing financial mechanisms supporting NbS finance. Additionally, Loloum recommends that investment codes be shifted to attract more targeted investors and that governments be proactive in adapting policies to promote more investments in restoration. He urges governments to take note of the current climate crisis: "In the aftermath of COVID-19 crisis, the local government was able to develop programmes to try to recuperate losses and trigger the economy, in that same effort to adapt to a better and more sustainable economy. It had to be a crisis that brought them to this state of mind. But we have been in a climate crisis for many decades."

Although projects within the first cohort of the Restoration Factory ranged in topic and region, all business proposals accounted for economic, social and environmental impacts. There was a clear emphasis on sustainable use of land and resources resulting in higher quality products, as well as a focus on the opportunity for job creation through localizing production and sourcing materials. Nature-based solutions- and restoration-focused businesses place a priority on improving livelihoods and community welfare while sustaining the natural environment and resources that the businesses rely on.

Innovation offers an important route out of many environmental problems, as stated by the sixth edition of the Global Environment Outlook assessment. Thus, it is imperative we mobilize financial and political systems to better support NbS and restoration businesses, according to the State of Finance for Nature report. Loloum states, "It is not only one business that can drive a value chain, but it is many businesses that work towards an ideal result that we are all looking for, [which are] the impacts on forest restoration."

Restoration Factory

Background on the Restoration Factory
The Restoration Factory has been created with the vision that restoration and business experts can join forces to build back a better future, in which ecosystems services are essential parts of a profitable, thriving and green business transformation. It is an e-learning programme developed by UNEP, FAO and IUCN that helps entrepreneurs develop enticing business models from ideation to validation to implementation and provides guidance to business developers in assessing the business case, supporting capacity building and offering market access considerations. The initiative aims at shaping a pipeline of opportunities for commercial and financial partnerships to be formed. To learn more or get involved as a mentor, click here.

UN environment programme

Background on UNEP Land-Use Finance Programme
The Climate Finance Unit aims to proactively unlock and scale up innovative financial solutions to transform land use to meet targets set by the Paris Agreement, the Bonn Challenge and the Sustainable Development Goals

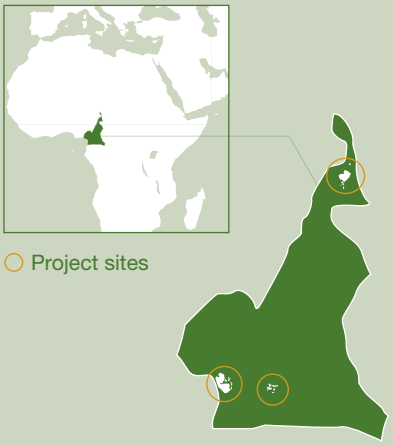
7 UNEP. 2021. State of Finance for Nature : Tripling investments in nature-based solutions by 2030. Nairobi. www.unep.org/resources/state-finance-nature

TRI ACHIEVEMENTS IN 2021

CAMEROON

Project updates and achievements

- The project propagated over 105 042 plants (46 982 bamboo, 54 060 NTFPs and 4 000 mangroves) to restore degraded areas in Mbalmayo, Akomnyada, Dizangue, Mouanko, Makilinguaï and Aïssa-Hardé.
- The project established over 250 ha of bamboo and NTFP plantations (68 ha in Douala Edea, 110 ha in Mbalmayo and 72 ha in the Waza landscapes).
- The project finalized the Forest Landscape Restoration Policy Influence Plan for Cameroon for endorsement by the Cameroon Government.
- The project supported the Ministry of Forestry and Wildlife in the preparation and printing of an agroforestry notebook that will be used by the forest administration to register and attest to private ownership and good practices of established forest plantations and agroforestry systems. The project also supported the training of over 250 forest administrators.



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

Cross section of the Lake Ossa Wildlife Reserve. Photo credit: © Sylvain Ebog.

Stemming the unintended consequences of palm oil production in Lake Ossa Wildlife Reserve, Cameroon

As unregulated expansion surges, the TRI Cameroon project is helping preserve the ecological integrity of the Lake Ossa Wildlife Reserve and the people that depend upon it.

The Lake Ossa Wildlife Reserve in Cameroon, an internationally recognized ecological wonder, is nestled within a mosaic of rainforest, freshwater swamp forests and large commercial farms. Established in 1948, the 4 000 ha reserve resides alongside the longest river in Cameroon, River Sanaga, which snakes across the Douala-Eda landscape feeding into the Gulf of Guinea. Unique and endangered wildlife feed and breed here and locals rely on the reserve for both food and fuel. Some 400 local fishermen work on Lake Ossa and a quarter of the population practices small-scale agriculture on the land surrounding the lake.

However, unregulated use by locals and the expansion of industrial agriculture are threatening the ecological integrity of the reserve, and, consequently, the people, plants and animals that depend upon it. “Our reserve is largely degraded from [human] activities,” explains Sylvian Ebog, custodian of the Lake Ossa Wildlife Reserve. With limited state resources and without sufficient staff or law enforcement to demarcate the reserve’s perimeter, the TRI Cameroon project is working with Sylvian and his team of eight to employ new strategies. Their joint approach is to accommodate and support settlers already residing within the reserve while reducing expansion into the area by newcomers.

A living fence on the reserve’s disappearing perimeter

Since 2000, the rich and fertile soil in the Douala-Eda region lured agro-industrial companies to the area, where they established large palm oil plantations at the expense of forests.[8] As these plantations grew and expanded, communities of palm oil workers joined the already existing Indigenous communities and local people living alongside or within the reserve. As new arrivals settled, they too cleared forests to set up subsistence farms, an unintended consequence of palm oil production. Today, over 20 per cent of the protected area has been transformed into farmland. With no plans underway to establish a development plan for the reserve the result is a fragmented landscape that is disastrous for the native plants and animals.

To prevent further encroachment and clearing within its borders, Sylvian and his team are building a living fence to mark the reserve from the neighbouring swathes of land. The TRI Cameroon project is supporting the reserve team by providing two indigenous bamboo varieties, *Bambusa longinternode* and *Bambusa vulgaris*, for planting along the reserve’s disappearing edge.

> *I include NTFPs in my farmland because, at maturity, it will help diversify my income.*
>
> Evelyne Mbatchou, a 50-year-old widow and mother of five, who has a farm near the reserve

8 Agribusiness Associates Inc. 2020. Case study on reducing food loss in palm oil in Cameroon. USAID. www.climatelinks.org/sites/default/files/asset/document/2021-02/2021_USAID_USDA_Cameroon-Palm-Oil-Case-Study.pdf

Bamboo is a type of NTFP, with recognized economic value for the benefit of the population. Once mature, these bamboo stems can be sustainably harvested by locals neighbouring or already within the reserve, ensuring they continue exercising their so-called rights of use. Bamboo is also remarkably fast growing, which allows for the revegetation of degraded areas in a short period while taking pressure off slower-growing trees. To date, the TRI Cameroon project has helped the reserve's conservation service grow and plant over 11 000 bamboo trees.

Placing restoration and community needs side by side

Bamboo is only one type of NTFP requested by locals and distributed in the area. The TRI Cameroon project is providing other high-value seedlings directly to farmers to plant on already cleared areas of the reserve. Nearly 800 other NTFPs, including species such as the bush mango (*Irvingia* spp.), the bitter cola (*Garcinia cola*) and the safou (*Dacryodes edulis*) have been planted. In 2022, a larger nursery will be established to propagate 50 000 bamboo and other NTFPs of interest to locals. Providing these species to farmers living within and alongside the reserve offers alternative sources of revenue and helps reduce the need to encroach or clear areas deeper inside the reserve. To date, over 48 farmers now include NTFP species in their cropland, with the TRI Cameroon project providing additional training to farmers in sustainable agroforestry techniques. As Evelyne Mbatchou, a 50-year-old widow and mother of five, who has a farm near the reserve, explains, "I include NTFPs in my farmland because, at maturity, it will help diversify my income."

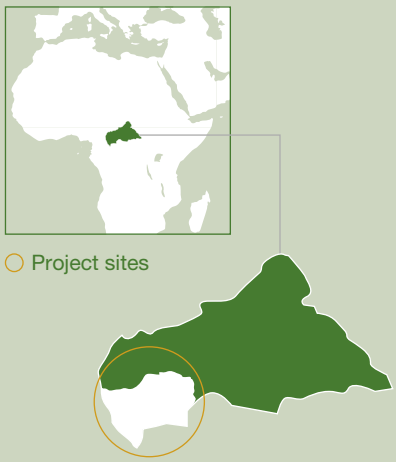
Communities planting NTFPs in farmlands neighbouring the Lake Ossa Wildlife Reserve as part of the TRI Cameroon project.
Photo credit: © FOGOH John MUAFOR.

In this way, the welfare of communities and restoration are linked, with locals becoming more and more familiar "with involvement in the project implementation," Sylvian says. With support and resources provided by the TRI Cameroon project, Sylvian has seen increased interest and participation from the locals who are sustained by the land – an important indicator of the long-term success of restoration activities – and also from municipal authorities, who are now seeking to expand restoration efforts to the banks of the River Sanaga. This active engagement lays the foundation for new approaches to bolster the country's ongoing restoration efforts.

Bamboo nursery established by the Conservation Service of the Lake Ossa Wildlife Reserve as part of the TRI Cameroon project.Photo credit: © FOGOH John MUAFOR.

CENTRAL AFRICAN REPUBLIC

Project updates and achievements



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- The project identified active pioneer fronts of forest degradation as potential restoration areas based on a review of official local development plans and an analysis of geospatial data covering the pilot areas.
- The project identified restoration opportunities in the periphery of the town of Pissa as well as near the edge of the Dzanga-Sangha protected area in Mona Sao village territory.
- The project set up restoration perimeters in five villages in the Pissa area with active participation from community members. This step allows for the mapping and transfer of on-the-ground restoration activities, such as reforestation, agroforestry or assisted natural regeneration. In total, the perimeters cover approximately 500 ha, and the community forest project covers over 5 000 ha.
- The project executed its first assisted natural regeneration efforts with the local community using saplings propagated from local tree seeds. With supervision from the TRI team, the seeds were collected from the forest and grown in a nursery. The tree plantings included ayous (*Triplochiton scleroxylon*) and khaya (*Meliaceae*) varieties and covered 25 ha.
- The project undertook analysis of added benefit for FAO to support the Centraforest Initiative, which was developed within the framework of a public–private partnership with the Central African Ministry of Forests. This initiative supports the development of 200 ha of agroforestry plantations in the Boutili area, 50 km northwest of Bangui.
- The project is finalizing operations on the edge of the Dzanga-Sangha protected area at the Mona Sao site, which will be carried out within the framework of a memorandum of understanding with the World Wildlife Fund (WWF).

Planting operation, FLR site in the municipality of Pissa. Photo credit: © FAO CAR Communication Unit.

Villagers unite around community forest project in the Central African Republic

Locals are turning to the TRI CAR project for help securing approval on a long-awaited community forest. If successful, the forest would be the first to receive official recognition, while bolstering support for future restoration efforts.

The CAR is known for its natural beauty, incredible wildlife and an abundance of natural resources, which serve to sustain the vast majority of its local populations. Yet, it is also known as a country plagued by decades of instability and slow economic growth that has led to food insecurity and extreme poverty. A constellation of factors makes forest resources, such as meat from wild animals, timber, firewood and land for small-scale agriculture, highly valuable. Without access to alternative sources of food and income, survival for many is linked to the proliferation of unsustainable farming practices. This day-to-day reality is the backdrop that makes FLR activities, which support ongoing improvements to ecological systems while enhancing human well-being, of particular relevance to the CAR.

The TRI CAR project, which has only been in full operation since November 2020, spent much of 2021 identifying restoration opportunities while securing the trust and support of local people and institutions. They presented maps and restoration plans that allowed different forest user groups, such as Indigenous peoples, youth, women and traders, to ask questions about the TRI CAR project, what it will accomplish and, importantly, how it stands to impact their lives. This exhaustive dialogue initiated by the TRI CAR project is an example of participatory forest management (PFM), which encompasses bottom-up planning with multiple stakeholders, especially vulnerable groups, across all levels of the restoration process.

A highly anticipated community forest

Village chiefs and prominent community leaders from the clustered villages of Pissa, Bombé, Boyama, Boyali and Bongombé in the southwest of the country have long sought to protect nearby forests and surrounding environments. It was through in-person meetings at the project sites that the TRI CAR project first learned of the coordinated efforts among three villages to establish a community forest. Community forests bestow locals with long-term rights to use and manage forest resources and further empower forest users to reap maximum benefits to their livelihoods. The villages even provided the TRI CAR project with official town hall documents dating back to 2014. However, despite successive attempts, there is no record of follow-up from the administrative authorities. After nearly a decade of unsuccessful inquiries, there was excitement and relief with the prospect of the TRI CAR project taking the lead on the community forest application. Recognizing the significance of this village-led initiative, the TRI CAR project aims to promote the community forest project through the financing of a perimeter for restoration activities in the Pissa area and its outlying villages. The TRI CAR team would also support the development of a management plan for the community forest – which is a prerequisite for forestry regulations – while acting as an independent third party

Imbrasia epimethea caterpillars on branches of Acacia auriculiformis. Photo credit: © Philippe Duchochois and Bienvenu Kemanda Yogo.

The villagers hope to see their forests dedicated to the conservation of plants and animals while still allowing for sustainable levels of hunting within a designated buffer zone.

to advise and mediate as villages negotiate their respective user rights. Community forest management engages locals in collaborative conservation, which aligns local interests with long-term restoration objectives in a way that also supports the various types of life found in these forest ecosystems. The villagers hope to see their forests dedicated to the conservation of plants and animals while still allowing for sustainable levels of hunting within a designated buffer zone. They also want to prevent unsustainable industrial logging and artisanal logging – where individual, small-scale millers harvest trees for the domestic market with or without permits – from taking over as they have in the past. If the application is successful, the community forest project will cover over 5 000 ha and will be the first officially allocated community forest project in the country.

Reciprocity and trust at work

In the short time the TRI CAR project has been active, the arrangements surrounding the prospective community forest highlight the remarkable progress on the ground and demonstrate a climate of trust among the collaborating villages and TRI. In many ways, the dialogue around the community forest facilitated rapid headway towards raising interest and support for forthcoming restoration efforts, including the identification of multiple areas for restoration as well as potential sustainable income-generating activities.

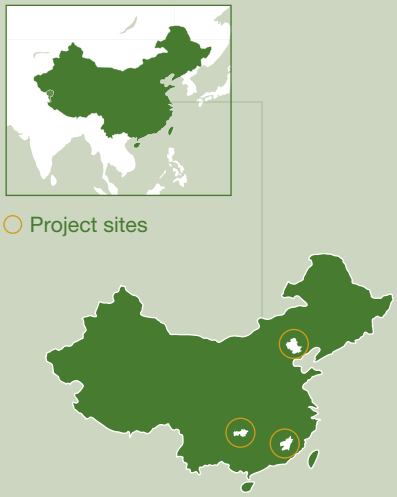
The seemingly straightforward task of identifying restoration areas, however, required its own diplomatic touch, and PFM principles were used again and again as villagers voiced concerns about sites earmarked for restoration. In order to build trust and promote transparency, the TRI CAR project invited members from all villages to participate in boundary surveys, in which they walked the lands together. The decision to invite these companion surveyors – ten individuals from each village – was extremely successful. In addition to collaboratively mapping out 500 ha, this exercise fostered engagement between community village members and allowed the TRI CAR project to benefit from local knowledge regarding land tenure issues and management practices. It also increased interest in the project among companion surveyors and within their respective communities, resulting in consent from the locals. Insight from the companion surveyors allowed for the sidestepping of potential conflicts regarding boundaries that – if insensitively managed – could jeopardize the TRI CAR project's future restoration efforts.

Ultimately, these 500 ha open possible paths ahead for restoration, which include natural regeneration where trees self-seed and spread naturally, assisted natural regeneration which entails manual tree plantings, and agroforestry which involves the incorporation of trees around and among crops and pasturelands. These future restoration activities are rife with potential to increase food security, provide animal habitat and improve livelihoods through sustainable use of natural resources. Equipping the villages with additional skills to better manage their forests, discover alternative sources of income and adapt to arising challenges all but assures restoration progress. However, it is only possible with the incorporation of PFM and behaviours that foster mutual respect and trust among those involved. These incremental yet essential steps illustrate the groundswell efforts of the villages and the TRI CAR project to restore forests while bolstering community well-being.

CHINA

Project updates and achievements

- The project prepared individual FLR-based innovative forest management plans for seven pilot SFFs. Specific measures, such as afforestation, replanting, tending and pruning have commenced.
- The project oversaw the completion of the 2021 key ecosystem services and socioeconomic monitoring across the seven pilot SFFs.
- The project officially completed and shared FLR plans for Bijie City, Fengning County and Xinfeng County with local authorities to promote local ecological development.
- The project supported the preparation of six bankable proposals, covering carbon finance, forest tourism and NTFPs, submitted by six of the seven SFFs.
- The project produced an online forestry course with the Mulan pilot SFF, which consists of nine lessons.
- The project translated and officially published a guide to the ROAM.



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A film crew walk long distances with heavy camera. Photo credit: © Tian Jiajie.

Chinese forest farm takes innovative learnings online

The TRI China project created an online forestry course that documents and shares the Mulan State Forest Farm's approach to forest restoration and management with foresters across the country.

In the northeastern region of China, a three-man camera crew is traversing the Mulan SFF. The Mulan SFF is one of eight sites where the TRI China project is active and well known for its unique geographical features and its innovative approach to forest restoration. The camera team is here to collect footage to showcase the site's management principles for an online forestry course co-developed by the TRI China project and the Mulan Forest Management Department.

At the core of the Mulan forestry course lies the FLR approach, which prioritizes not only the ecological function of forest landscapes but also the myriad of ways humans benefit from and rely on such landscapes. This is reflected in the Mulan SFF's management strategy, which aims to not only increase the overall forest cover and optimize forest vegetation through reforestation but to also ensure ecosystem services, such as the forest's unique geographic role as an ecological barrier against the sand-carrying winds headed for Beijing and Tianjin. In addition to prioritizing windbreaks, the Mulan SFF prioritizes water conservation and sand fixation, which bolsters the forest's ability to serve as a protective barrier and limit the amount of sand and other particles deposited in the cities. Other SFF sites working with the TRI China project are following a similar approach to prioritize ecosystem services based on respective geographical contexts.

Tian Guoheng, the director of Mulan SFF, believes that sharing first-hand practical experiences will improve the visibility of the FLR approach, and will build foresters' ability and self-confidence to use it to grow flourishing, more diverse and productive forests across the country. There are approximately 4 000 SFFs in China, covering 77 million ha or 8 per cent of the country's land territory. Historically, the management of these SFFs has focused on maximizing timber production and typically by planting just one or two high-yielding species of trees. However, experience and studies illustrate how these forest plantations are particularly susceptible to disease and other shocks, delivering fewer ecosystem services than forests managed to more closely resemble primary forests or forests that are largely undisturbed from human influence. In contrast, natural forests, composed of many native tree species, store more carbon, have greater resilience against pests and diseases, and provide more suitable growing conditions and habitats for at-risk plants and animals.

Runoff Field for water conservation monitoring of Caoyuan SFF in Hebei Province. Photo credit: © NIU Jiayi.

Forest management in China is shifting from increasing quantity to improving quality

Zhang Songdan, Chief Technology Adviser of the TRI China project

Out from behind the drawing board

A team of 32 people, sourced from both the TRI China project and Mulan SFF staff, conceptualized the course of nine video lessons. It took three months of planning, writing and the incorporation of suggestions from outside experts to finalize the lesson scripts. The video lessons outline how FLR management theory and principles – such as moving away from monoculture tree farming and applying new technologies – can result in more productive forests, including improved ecosystem services, higher quality seedlings and timber. The lessons also highlight strategies for tending forests at various stages of development. According to Zhang Songdan, Chief Technology Adviser of the TRI China project, the course has the potential to establish, localize and mainstream FLR methods in China, especially in other SFFs. "Forest management in China is shifting from increasing quantity to improving quality," she says. Using the Mulan SFF as an example, other SFFs can use the FLR approach to better assess their own needs, goals and activities.

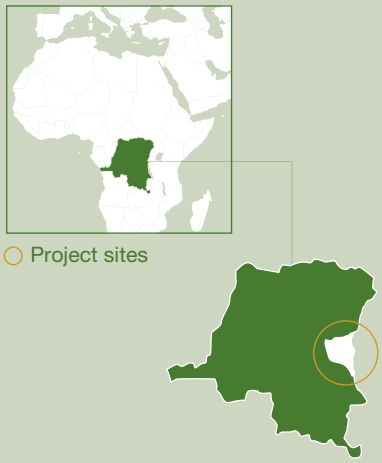
After eight weeks in post-production, Guoheng is thrilled with the final product. "It allows us to review familiar knowledge [from] a more systematic, in-depth and objective perspective," he says. It also helps SFF teams across the country better understand FLR methods and to discover areas for improvement. In 2021, they completed a successful pre-screening of the course. In 2022, they plan to share the Mulan forestry course with students, agroforesters and SFF staff. They are even considering distribution through other channels, such as incorporation within forestry school curricula. Whether other SFFs follow suit and produce their own video courses is yet to be seen, but even if the Mulan forestry course stands alone, it fills a critical knowledge gap that complements the more theoretical information currently available. Not only does the Mulan forestry course make a comprehensive contribution to forest restoration efforts and the application of FLR principles in China, which was previously unavailable to many, but it also encourages other SFFs to summarize their own knowledge and experiences – even if they don't end up on video.

Ecosystem services monitoring in Gonglianping SFF, Guizhou province. Photo credit: © Shang Yanjun.

DEMOCRATIC REPUBLIC OF THE CONGO

Project updates and achievements

- The project validated documents on the provincial FLR strategy and the results of the ROAM at both the provincial and national levels.
- The project together with two academic institutions, the Université Evangélique en Afrique and the Université Catholique de Bukavu, is conducting measuring, reporting and verification (MRV), and sustainable land management studies to determine the amount of carbon sequestration prior to the implementation of the project activities.
- The project validated the findings of a socioeconomic study carried out across the two chiefdoms, Ngweshe and Kabare.
- The project signed a letter of agreement with Louvain Coopération to develop microprojects promoting FLR interventions and has begun raising awareness among 150 potential associations and cooperatives.
- Together with two local NGOs, the project set up 90 Dimitra Clubs to address community-led challenges across the two chiefdoms: 50 in Ngweshe and 40 in Kabare.



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Tree felling for carbonisation - Kabare territory, Bushwira group Bushwira village Nyamulira village. Photo credit: © Ngoy Mbaya Lebeau Laurin.

Shining a new light on the Democratic Republic of the Congo's Indigenous Pygmies

The Congolese Indigenous Pygmies are critical guardians of biodiversity, and their knowledge is key to advancing the TRI DRC project's restoration efforts.

It is not easy to reach the Kahuzi-Beiga National Park (KBNP) and the people who live there. The route from Bukavu, the capital of South Kivu Province in eastern DRC, traverses mountainous terrain along the southern edge of Lake Kivu which lies on the border with Rwanda. The protected area is one of the biggest national parks in the country spanning 600 000 ha and is the planet's last refuge for the rare and endangered eastern lowland gorilla (*Gorilla beringei graueri*). For millennia, these forests have sustained the Congolese Pygmies, who are among Central Africa's oldest Indigenous peoples, but the modern world is slowly collapsing in on them, eroding their culture.

Demand for the DRC's natural resources and rapid population growth fuel an insatiable appetite for land, and these expansion-related challenges are exacerbated by political corruption, instability and armed conflict as different groups vie over control. Forests are indiscriminately bulldozed to create industrial farms or to meet international demand for timber, and even the establishment of the KBNP in the 1970s was met with resentment as Pygmy communities argued it robbed them of ancestral lands. This is the complicated backdrop against which the TRI DRC project is taking action, and it requires special care to safeguard these vulnerable peoples' right to live in and use the KNBP's forest resources while advancing urgently needed restoration.

Promoting attractive alternatives to protect wildlife and rare species

The TRI DRC project's interventions for the DRC's forest people are aimed at improving food security and providing income and socioeconomic empowerment through alternative options. This is pertinent as some of the activities that sustain the Congolese Pygmies' traditional ways of life, such as the hunting and trade of meat from wild animals or bushmeat, and the collection of NTFPs, are seen as counter to conservation efforts and even criminalized. Traditionally, African forest communities lived in symbiosis with a forest ecosystem and their nomadic lifestyle

Kahuzi-Biega National Park, young gorillas, South Kivu. Photo credit: © Benjamin De Ridder.

meant they rarely outstripped the resources within a temporarily settled area. However, as village demand for bushmeat grows and wild animal populations plummet, the long-term sustainability of these practices is being called into question.

To provide sustainable alternatives, in 2021, the TRI DRC project together with the Community Association for the Conservation of Biodiversity (ACCB) distributed rakes, hoes and watering cans as well as 25 g of amaranth, carrot, cabbage and onion seeds to 424 Indigenous Pygmies in the villages of Muyange, Buyungule, Makondo and Cibuga to be used for building vegetable gardens. These gardens will diversify the food available to these communities for up to three months. The TRI DRC project also installed hives for honey-producing bees, promoted the planting of fruit trees and provided material support for raising and breeding rabbits, which provide an alternative supply of lean, game-like meat.

In addition to diversifying food sources, the TRI DRC project provided opportunities for the Congolese Pygmies to earn money and help mitigate a worrying socioeconomic disparity within the project areas. The daily income per person within the Pygmy communities sits around USD 0.12 compared to the average of USD 0.50 within the Congolese Bantu communities. Using their expert knowledge and skills as the original stewards of these forest ecosystems, the Pygmy communities received payment for the collection and propagation of native tree seedlings from the forest to be grown across five newly established nursery sites. Together with the TRI DRC project's distribution of watering cans, wheelbarrows, hoes, rakes, spades, hammers, decametres and grow bags, the role of Pygmy communities is essential for the large-scale production of tree seedlings needed to advance restoration along water edges or riparian zones within the KBNP in 2022.

Complimenting these economic efforts are actions by the Dimitra Clubs, groups of women and men who meet and discuss collective actions to solve community problems.[9] Ninety newly established clubs are developing microprojects to improve the income of the Congolese Pygmies in partnership with the TRI DRC project, including Louvain Coopération and others. The TRI DRC project's end target is to see at least 50 per cent of the project's beneficiaries living above the poverty line, compared to 20 per cent at the start of the project.

Learning from and safeguarding Indigenous peoples' rights and knowledge

Congolese Pygmies have long cultivated an intimate relationship with unparalleled insight into sustainable resource use and the ecosystems in which they live. Learning from them fosters the TRI DRC project's aim of harmonizing local and Indigenous knowledge with robust conservation practice. This inclusive approach to conservation sees that Indigenous peoples' knowledge is reflected at all levels of restoration from identifying sites for tree plantings, determining which fruit tree varieties would thrive where, as well as the collection of

South Kivu. Photo credit: © Benjamin De Ridder.

9 FAO. 2016. Dimitra Clubs in the Democratic Republic of the Congo: Food Security and Nutrition | Gender | Food and Agriculture Organization of the United Nations. [online] Available at: https://www.fao.org/gender/resources/videos/video-detail/en/c/416499/ [Accessed 18 August 2022].

seeds and other nutrient-rich materials needed to successfully propagate the region's forest varieties.

Balancing restoration efforts while safeguarding the Congolese Pygmies' cultural heritage in the existing projects area also requires revisiting land tenure issues and assumptions embedded within national institutions and established conservation frameworks. While the DRC took steps to legally guarantee the Pygmies' rights to land and natural resources in 2021, communities still suffer severe social exclusion, discrimination, violence and increasing poverty.[10] This calls for the TRI DRC project's constant collaboration with the Congolese Pygmies' own governance systems and leadership to properly identify sites of cultural significance, ensuring the embedding of the Congolese Pygmies in the planning and execution of restoration interventions, and making swift corrections in response to grievances.

The TRI DRC project's efforts recognize how inextricable the lives and well-being of the Congolese Pygmy communities are to achieving the goals of forest restoration. Although the path forward crosses a minefield of obstacles, this year's progress reflects the promise of engagement with these tribal communities. With the recognition of the essential role of the Congolese Pygmy communities in nurturing these forests – and through their socioeconomic empowerment – the TRI DRC is part of a new symbiosis that shines a light on Indigenous peoples' rights and their ability to help save the country's wondrous ecosystems.

TRI DRC is part of a new symbiosis that shines a light on Indigenous peoples' rights and their ability to help save the country's wondrous ecosystems

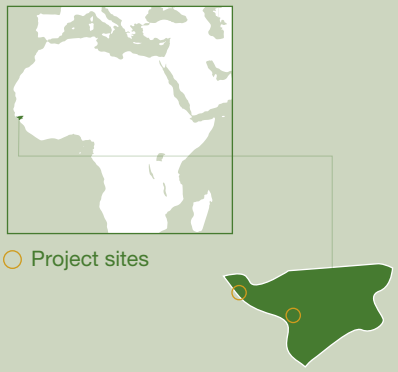
SARCAF fruit tree nursery with funding from GIZ - Grafted avocado. Photo credit: © Ngoy Mbaya Lebeau Laurin.

10 United Nations. 2009. State of the world's Indigenous peoples. New York, USA. www.un.org/esa/socdev/unpfii/documents/SOWIP/en/SOWIP_web.pdf

GUINEA-BISSAU

Project updates and achievements

- Together with ten partner villages (807 men, 528 women), the project planted 167 798 *Rhizophora* and *Avicennia* mangrove seedlings on 82 ha.
- The project distributed a total of 20.4 tonnes of rice seeds better suited to salinity and more able to survive less reliable rain seasons to the partner villages.
- The project established seven garden areas with fences and wells to support the engagement of women and provide alternative income-generating activities. The project also provided four rice huskers, threshers and covered sheds.
- The project provided training to villagers on mangrove restoration techniques and database management.
- The project has helped restore 287 ha of rice fields, benefiting 411 families.



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Horticultural perimeters and wells. Photo credit: © IBAP, IUCN, RICE & MANGROVE PROJECT, 2022.

Helping local communities turn the tide on degraded mangrove forests in Guinea-Bissau

For centuries, rice farming has transformed the coastline of Guinea-Bissau, altering the landscape that mangroves need to thrive. Now, locals are working to save their way of life by restoring forests, rehabilitating rice fields and exploring new sources of revenue.

Coastal farming villages in Guinea-Bissau tread a thin line between too much or too little water. Irregular rainfall and rising seawater levels, a consequence of climate change, are threatening the viability of harvests and livelihoods. In order to mitigate the adverse effects of these conditions, the TRI Guinea-Bissau project joined forces with ten at-risk villages as they work to reverse a legacy of coastal degradation.

Implementing changes to prepare for the future is essential. “In five years, we won’t be able to live here anymore,” says Dominique Djata, Village Chief of Jobel, a village located on the country’s northwestern coast. “We can’t even imagine being here in 15 years,” he explains.

Djata’s community knows that without the mangroves to protect the coastline, water will enter the houses as the sea level rises. With this in mind, the TRI Guinea-Bissau project expanded its efforts in 2021 to restore the viability of these rural communities along three fronts: 1) re-establishing mangrove ecosystems, 2) helping households diversify their incomes and 3) rehabilitating traditional rice production.

TRI Guinea-Bissau project provides a holistic package of support to restore mangrove ecosystems, facilitate the renewal of traditional rice production, distribute vital materials and share knowledge.

Coupling mangrove restoration with rice field rehabilitation

The farmers of Guinea-Bissau, over decades, have established a rich, traditional farming heritage of using mangrove rice cultivation. Coastlines are all but cleared of mangroves, save a few that act as a buffer against storm surges and erosion. Farmers have built dykes – embankments of earth – to prevent seawater from ingressing and ruining their crops and to divert the salty water away from the rice stalks. With sea-level rise, rice fields are increasingly abandoned because the dykes are no longer effective at protecting the crops.

In exchange for assistance reinforcing earthen dykes and the incorporation of advanced hydraulic management in strategically important areas, rice farmers working with the TRI Guinea-Bissau project and the French NGO Univers-sel committed to flattening out the dykes around abandoned rice fields to once again allow seawater to reach mangrove seedlings, or propagules, which have taken root on their own. This process of facilitating the natural renewal of mangroves is called assisted natural regeneration and is being supervised by national NGOs, Tiniguena and AD, and the Biodiversity Agency of Guinea-Bissau.

Still, clearing away the dykes and allowing mangroves to distribute on their own is not always sufficient. Propagules are also being planted by hand. Since 2020, around 168 000 mangrove seedlings have been planted and 464 ha of mangroves have been restored with the help of over 1 300 villagers.

In Guinea-Bissau, rice field rehabilitation must go hand-in-hand with mangrove restoration, especially in the most vulnerable villages. Rice field rehabilitation ensures food security and sustainability and by protecting and optimizing the harvests from fields already in use, it slows the conversion of untouched ecosystems into modified landscapes. Moreover, it merges

traditional farming customs with more efficient technologies, which help villages overcome the negative impacts of sea-level rise and irregular rain.

A key dimension supporting rice field rehabilitation includes the distribution of rice seeds that are more resistant to saltwater and more resilient in the face of water shortages. In 2021, the TRI Guinea-Bissau project supplied 20.4 tonnes of rice seeds to seven partner villages along with important machinery, such as rice threshers and huskers and more efficient wood stoves. Three rice seeds are provided but the two main varieties are the kablac and the yaka sow. The kablac is a short-cycle variety, which reaches maturity in up to 130 days. This is an advantage when the rainy season is shorter. However, it requires systematic water management and the continued use of the dykes. The yaka sow has a longer cycle but produces more: nearly 3 tonnes/ha. Importantly, the rice seeds provided by the TRI Guinea-Bissau project have been certified and are more likely to sprout compared to the seeds used by local farmers, which are often considered genetically degraded due to the cross-breeding of different varieties.

Support interventions to advance restoration on multiple fronts

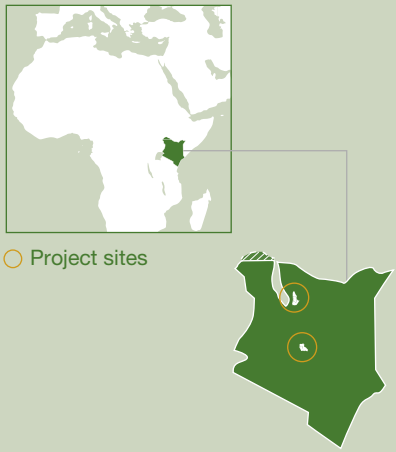
Concentrating solely on rice production is not enough to ensure the survival of coastal communities in Guinea-Bissau. To help local communities diversify sources of household income away from rice production, the TRI Guinea-Bissau project is supporting farmers, especially women, to establish new horticulture areas, solar salt farms and oyster farms. In 2021, nearly 600 women from seven villages were involved in preparing areas for gardening. In each of the villages, a designated area was fenced off and wells were dug, which allowed for onions, tomatoes, chilies, peppers, okra and African aubergines to be planted.

The TRI Guinea-Bissau project provided equipment and training for an additional 68 women to produce solar salt. Solar salt is created by pulling saltwater into shallow ponds. With exposure to sun and wind, the water evaporates leaving behind salt crystals. Like farming, there is a season for production, which will run from February to May 2022. Each woman received three UV-resistant synthetic fabric covers, which have a potential production capacity of 50 kg of salt per day. Another 50 women received oyster farming equipment and training sessions. They expect to collect their first harvest in October 2022. The TRI Guinea-Bissau project has committed to continue introducing 50 women every year to this promising source of revenue until 2023 when the project ends.

Together, the efforts of the TRI Guinea-Bissau project, its partners and local communities are helping create a more sustainable path forward for the people dependent on and devoted to these magical coastal ecosystems. The TRI Guinea-Bissau project provides a holistic package of support to restore mangrove ecosystems, facilitate the renewal of traditional rice production, distribute vital materials and share knowledge. All of which will serve to advance the well-being of Guinea-Bissau's unique coastal villages and the revival of mangrove forests in the face of an uncertain future.

Training on oyster farming. Photo credit: © IBAP, IUCN, RICE & MANGROVE PROJECT, 2022.

KENYA ARID AND SEMI-ARID LANDS



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Project updates and achievements

- The project taught 90 (77 men, 13 women) community members how to establish microcatchments in two adjacent conservancies in the Mukogodo landscape in Laikipia County. A total of 3 700 microcatchment bands, covering an area of 46.2 ha, were constructed.
- The project completed the ROAM process in the two landscapes targeted by the project and produced detailed maps showing degradation across 27 874 ha of the Mount Kulal and 23 406 ha of the Mukogodo landscapes respectively.
- The project's five-year (2022–2026) Forest and Landscape Restoration Implementation Action Plan (FOLAREP), which aims to restore and sustainably manage deforested and degraded landscapes, has been reviewed by a policy consultant, and a related policy influencing plan has been developed. The reviewed FOLAREP was presented for further review to a wide spectrum of stakeholders in national conferences and county consultative meetings with senior government officials in attendance.
- The project reviewed the 2016 forest regulations (equitable benefit sharing) in consultation with the National Alliance of Community Forest Associations (NACOFA) and collected the opinions of local communities via 96 community forest associations (CFAs).
- The project has revised and launched an improved PFM plan for the Mount Kulal ecosystem, which covers a total of 51 436 ha (5 670 ha in the core zone and 45 766 ha in the buffer zone). The management plan envisions biodiversity conservation and wildlife habitat management in the forested area through minimal impact ecotourism (e.g. walking, bird watching), monitored extraction of resources and maintaining nature trails.
- The project also initiated the development of a strategy for sustainable commercialization of NTFPs by carrying out a situational analysis of the NTFPs subsector in the country.
- The development of a national FLR knowledge management system was initiated.
- Capacity building for the county environment committees was carried out in the three target counties and their capacity to promote FLR activities was enhanced.

Kenyan pastoralist provides water for her cattle at a water point in the Mukogodo Forest. Photo credit: © Luis Tato.

A fresh start for the Mukogodo Forest Reserve, Kenya

Participatory approaches to land management are key to addressing competing land uses and preserving traditional ways of life in the harsh landscapes within the Mukogodo Forest Reserve in Kenya.

For millennia, little rain, heat waves and drought – together with human activities – have shaped the national Mukogodo Forest Reserve in Kenya. A legacy of competition over the access and control of local resources in the dry northeastern corner of Laikipia County has resulted in mutual antagonism and conflict, with each forest user group having competing claims to the land, who can use it, and how. The Indigenous Maasai, Dorobo and Yaaku communities act as stewards and depend on the grasslands to feed their livestock. Local pastoralists and ranchers move their herds along traditional migration routes from the dry plains to Mount Kenya further south, grazing them in the reserve.[11] Conservationists hope to limit human activity in the area to protect the habitat of numerous threatened species. Intensifying droughts make the situation in the reserve more precarious.

In 2021, northern regions received less than 30 per cent of normal rainfall and the Kenyan Government declared the current drought that started in September a national disaster. Droughts are becoming more frequent due to climate change with occurrences doubling since 1999.[12] Demand for natural resources and land-use competition is consequently increasing – drastically. Over 23 000 ha of the reserve is now considered degraded according to the TRI Kenya ASAL project's ROAM. With harrowing consequences on the horizon, the TRI Kenya ASAL project and its partners are promoting the use of PFM to restore the Mukogodo landscape's vitality and empower communities through self-determination.

TRI Kenya ASAL project and its partners are promoting the use of PFM to restore the Mukogodo landscape's vitality and empower communities through self-determination.

Creating new partnerships to stop landscape degradation

Communities need to work together behind a strategy that prevents landscape degradation, especially in the face of intensifying climatic conditions. Participatory forest management practices are essential to meeting the varied needs of Laikipia County's different actors while advancing FLR. Participatory forest management emphasizes the importance of well-established roles, recognizes the rights of different stakeholders and stresses the importance of compromise. This approach is able to achieve forest restoration and sustainable resource use by also ensuring people are afforded a secure livelihood.

In 2021, the TRI Kenya ASAL programme continued its work bringing together CFAs, group ranchers, Indigenous peoples and the national government. As an example, the NACOFA which spearheads PFM in the country together with the TRI Kenya ASAL is reviewing the country's policies to identify implementation gaps and future regulatory reforms. Another example is the role the TRI Kenya ASAL project

11 Oula Muok, B., Mosberg, M., Hallstrøm Eriksen, S.E. & Onyango Ong'ech, D. 2021. The politics of forest governance in a changing climate: Political reforms, conflict and socio-environmental changes in Laikipia, Kenya. Forest Policy and Economics, 132 (2021) 102590. https://doi.org/10.1016/j.forpol.2021.102590

12 PBS NewsHour. 2022. Kenya's worst drought in decades creates humanitarian crisis [audio recording]. Arlington, USA. www.pbs.org/newshour/show/kenyas-worst-drought-in-decades-creates-humanitarian-crisis. [Accessed 18 August 2022].

Degraded landscape in Mt Elgon area. Photo credit: © Richard Kaguamba.

plays in providing workshops to over 106 CFAs to discuss forest incentives, any benefit-sharing regulations and details within the country's 2016 Forest Management and Conservation Act. This act defines the rights in forests, prescribes rules for the use of forest land and makes provisions for community participation.[13] The TRI Kenya ASAL project is supplementing these workshops with training sessions in PFM methods and assessments. In all, these capacity-building events contribute to the ongoing process of establishing a new management strategy for the reserve as well as supporting countrywide efforts to improve monitoring, reporting and knowledge dissemination at the national level. Each engagement orchestrated by the TRI Kenya ASAL programme provides opportunities to negotiate shared responsibilities and the fair allocation of benefits.

Entrenching community participation and benefit sharing through PFM requires identifying synergies across partners who work directly with the Mukogodo Forest Reserve and across other project sites in Kenya. This process supports the TRI Kenya ASAL project and its partners' central focus to bolster support for the Kenya Forest Service and for CFAs to ensure they are well governed. Ultimately, PFM enables community-level institutions that empower forest users to engage with forest restoration and the forest management plans put forward by the government. Due to its potential, in 2022, the Kenya Forest Service will renew and continue the use of this management strategy for the Mukogodo Forest area in the coming years.

Restoration in and around the Mukogodo Forest

In addition to supporting the development of new management strategies that incorporate PFM, the TRI Kenya ASAL project has made significant headway with restoration on the ground. Since 2020, the TRI Kenya ASAL project has focused on restoration in Mukogodo Forest and the associated landscape. The project has introduced over 8 600 people to assisted natural regeneration and natural regeneration, the benefits of seeding with perennial grasses and the importance of monitoring livestock carrying capacity. Over 43 000 ha across project sites, which includes the Mukogodo Forest Reserve, are now under improved management and eight tree nurseries have been established to provide seedlings for plantings.

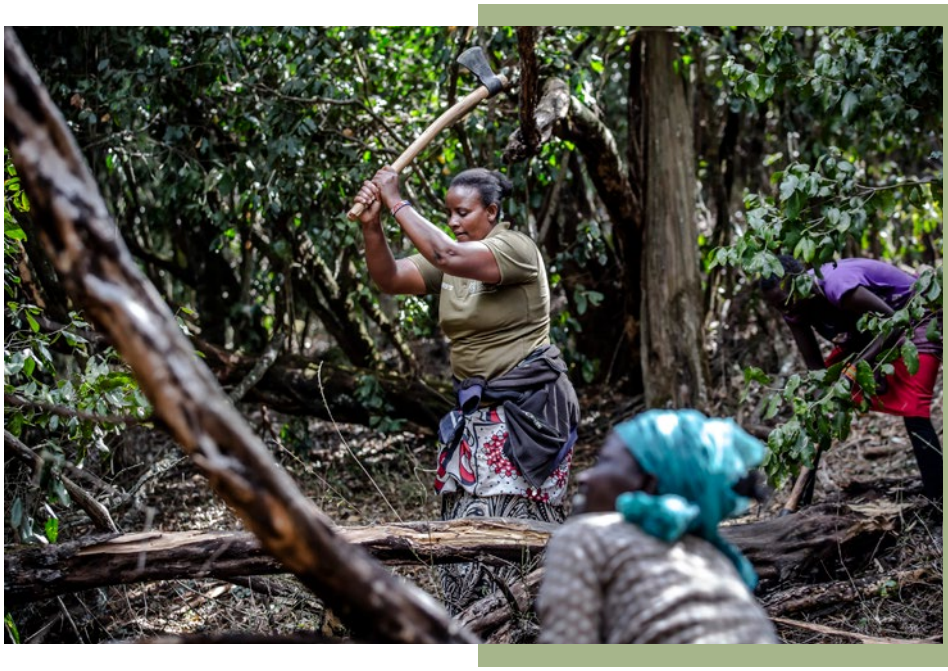
Increasing the overall tree and grass cover found within the Mukogodo Forest Reserve is crucial in helping local communities withstand the impacts of a hotter, changing climate. These plants increase the landscape's resilience and the communities that depend on them. The trees and grasses secure the soil, preventing water and wind erosion, and ultimately, desertification

13 Kenya. Forest Conservation and Management Act, 2016 (No. 34 of 2016). www.ecolex.org/details/legislation/forest-conservation-and-management-act-2016-no-34-of-2016-lex-faoc160882

– a type of land degradation through which fertile land becomes increasingly unproductive. For example, the African foxtail grass (*Cenchrus ciliaris*), which is being reseeded across the landscape, has a fibrous root system that is notoriously deep and strong, extending to more than two metres. Perennial grasses also help the soil retain moisture while providing an important food source for grazing livestock, such as cattle and goats, and wildlife. Restoration of these landscapes also secures ecosystem services, the varied benefits to humans that arise when natural environments flourish in their diversity and complexity.

Another key intervention resulted in multistakeholder engagement around the building of microcatchments – semi-circular bunds of red soil – to help prevent water runoff.[14] The longer rainwater is cradled along the contours of the bund, the more likely it will seep into the dusty landscape and provide enough water to grow crops and feed livestock. This year, the TRI Kenya ASAL project facilitated the construction of 3 700 microcatchment bands, covering 46.2 ha in the reserve. Even more important is that participating communities verbally committed to restricting grazing in the newly tended area for up to two years. This type of social fencing highlights the collaboration between communities of different social backgrounds and a willingness to voluntarily engage in restrictions in exchange for mutual benefits. Stakeholders acknowledge their shared dependency, the need to invest in restoration and are empowered to engage with one another knowing that the management approach is crafted to advance their interests.

In 2022, the TRI Kenya ASAL project will extend its efforts by using 49 ha for hay production – to feed livestock during the dry seasons – and to plant indigenous trees around these hay farms. It will reinstate six additional high-priority water infrastructure projects with the hopes of improving water management for over 3 000 people. The same project will also facilitate access to water for harvesting and processing by bioenterprise groups. Other efforts will focus on supporting the county government to prepare a county environment action plan, finalization of the Forest and Landscape Restoration Action Plan, capacity building on resource mobilization and building the capacity of CFAs on sustainable bioenergy options for domestic use, among other things. Together with PFM, these ongoing and future restoration actions are giving the Mukogodo Forest Reserve a chance for a fresh start.



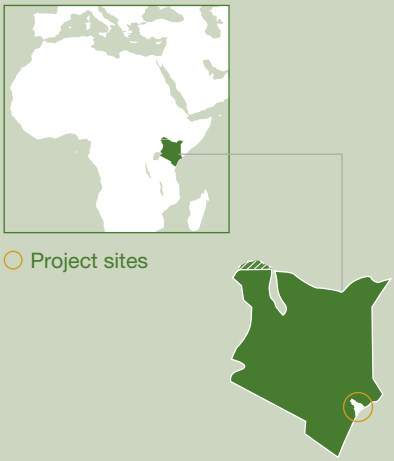
Mukogodo Forest. Photo credit: © Luis Tato.

14 FARMESA. 2003. Soil and water conservation with a focus on water harvesting and soil moisture retention. Harare. www.fao.org/fileadmin/templates/nr/images/resources/pdf_documents/FARMESA_SWC1.pdf

KENYA TANA DELTA

Project updates and achievements

- Some 99 700 indigenous tree seedlings were grown by 13 community groups and the Kenya Forest Service. The TRI Kenya Tana delta project supported these efforts through the provision of tree nursery materials, training on restoration and the nursery establishment.
- The project completed the ROAM process for the Tana River delta. Key findings show the total degraded land area in the Tana River delta to be around 125 000 ha. This 125 000 ha consists of 65 000 ha of rangelands, 27 000 ha of cropland, 26 500 ha of wetlands and 6 500 ha of forest land.
- The project initiated the registration of the Tana Indigenous and Community Conserved Area as a wildlife conservancy, and remains involved in the registration of the Tana Delta Community Wildlife Conservancy Association, which was established to manage the new conservancy.
- The project together with Nature Kenya helped establish the governance structure of the Tana Delta Green Heart initiative. The Tana Green Heart secretariat is now operational and a development committee is being established.



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Planted mchu mangroves at a restored site in Kipini, Tana River delta. Photo credit: © Caroline Chebet.

Securing the future of the Tana River delta, Kenya, with community-led restoration

With support from the TRI Kenya Tana project, CFAs are teaching residents how mangrove and indigenous tree restoration can pave the way towards a healthy and prosperous future.

Hundreds of mangrove seedlings stand tall on a patchy stretch of land in Kipini, a settlement along the Tana River delta in Kenya. The newly planted seedlings reach skyward despite the scorching sun above while Riziki Bwanake, a village headwoman who was born and raised here, delicately tends to the plants. Bwanake is a founding member of the Kipini CFA – one of five CFAs that the TRI Kenya Tana project is working with to help protect and restore degraded landscapes in the region.

Although often underfunded or lacking technical resources, CFAs supported by the Kenya Forest Service and county governments are directly responsible for the management, protection and health of local forest resources. By partnering with the CFAs, the TRI Kenya Tana project is advancing community-led efforts to create management plans, establish tree nurseries, organize plantings and monitoring plans, and strengthen overall support for the Tana Delta County goal of restoring over 50 per cent or 200 ha of deforested and degraded forest land by 2030. This includes Bwanake's mangroves.

Supporting community-led restoration

Bwanake's Kipini CFA strives to address the threats to mangroves, such as the unsustainable and illegal harvesting of mangrove trees, the clearing of forests for agriculture, sedimentation of mangrove areas and sea-level rise. The 89 members of the Kipini CFA have already planted close to 100 000 mangrove seedlings and have established two mangrove tree nurseries with over 50 000 seedlings. These efforts are helping preserve the nine mangrove species found in the Tana River delta for improved prosperity within the region.

The Kipini CFA also targets the restoration of forested landscapes with native trees. "Our members collect indigenous tree seeds, from which they either plant directly or propagate in nurseries for future planting," Bwanake explains. With help from the five CFAs and other collaborating committees and associations, they have collected and seeded a total of 8.6 tonnes of indigenous tree seeds in degraded landscapes. The TRI Kenya Tana project plays a vital role in providing financial support for seed collection and tree nurseries. Despite setbacks from extended periods of drought and grazing livestock, the Kipini CFA has restored 72 ha of degraded forests with native trees.

Bwanake has seen first-hand the positive impacts contributed by the TRI Kenya Tana project. Training activities and information provided to the CFAs significantly enhance community members' understanding of landscape restoration and help locals hone technical skills, such as how to care for mangrove seedlings. In 2021, the TRI Kenya Tana project helped organize mentorships and an educational exchange to Mount Kenya and Arabuko-Sokoke forest ecosystems. Practitioners shared technical information at knowledge-sharing and capacity-building events hosted by the project. For example, participants

> *Our communities stand to gain more from healthy landscapes than degraded ones. Restoration can secure a sustainable future for our children and other future generations.*
>
> Riziki Bwanake, a village headwoman and a founding member of the Kipini CFA

learned how to accurately track numbers of animals and plants, the best methods for seed collection, and which plant species are ideal for restoration in the region.

Key training focused also on how to monitor restoration progress. For example, to better protect the restored sites, the newly seeded areas need to be charted. Already, 1 000 ha have been mapped out. The development of comprehensive restoration monitoring is dependent on on-the-ground efforts and the scaling-up of best practices. It relies upon local community members like Khaija Komora of the Chara CFA. Komora patrols and monitors the forests and will inform authorities when he finds evidence of illegal logging or grazing animals. By minimizing disturbance within seeded areas, CFA members will increase the likelihood that seedlings establish deep roots and will thrive.

Distributing the benefits of landscape restoration

Tens of thousands of Kenyans depend on the Tana River delta directly or indirectly. They make a living through activities such as fishing, tourism, small-scale farming, timber collection and raising livestock. Regrettably, this heavy reliance is outstripping the Tana River delta's resources faster than they can be replenished.

As Tana Delta County continues to work towards its restoration goals, the CFAs together with the TRI Kenya Tana project strive to see local inhabitants reaping the immediate and future benefits of revitalized landscapes. Komora wants everyone living in the area to understand that mangroves are "our lifeline".

"They support our tourism activities while also helping prevent erosion of coastlines," he says, referring to how the roots and leaves of mangrove trees obstruct water flow, providing a buffer against storm surges while also stabilizing soil along the water's edge. This is an example of ecosystem services or benefits to humans that result from a functioning ecosystem.

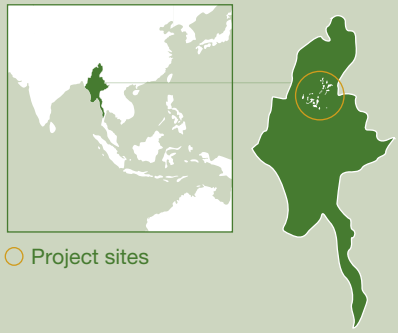
Healthy mangrove forests provide tangible commercial opportunities. The trees produce durable and salt-resistant timber, which locals use for boat-building, furniture-making and construction. The seeds of some species are even used to treat ailments, like stomach aches, explains Sadiki Ramadhan, a Kipini CFA member and traditional medicine specialist.

Beyond the commercial and medicinal value of trees, the mangrove forests are a unique part of the landscape in the country, across the continent and around the world. The Tana River delta is designated as a key biodiversity area because of the diversity of plants and animals found here. This wildlife attracts tourists and birdwatchers to the Kenyan coast and is important for fishing communities.

Guided by the CFAs, local communities and nearby settlements are constantly working to establish balance, one that allows them to meet everyday needs while allowing the ongoing restoration drive to make good on its promise. Bwanake sees the hope her mangrove seedlings represent. "Our communities stand to gain more from healthy landscapes than degraded ones," she says, adding that "restoration can secure a sustainable future and these critical landscapes for our children and other future generations."

Riziki Bwanake, a member of the Kipini CFA, inspects planted mchu mangrove seedlings at one of the restoration sites with a colleague in the Kipini, Tana River delta. Photo credit: © Caroline Chebet.

MYANMAR



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Dipterocarp tree in the Bat cave area in Kanbalu Township. Photo credit: © Bo Lager and Htet Eain Khant.

The Restoration Initiative Myanmar project suspended following military coup

A military coup in early 2021 resulted in a two-year suspension of the TRI Myanmar project's efforts.

The TRI Myanmar project was officially suspended for two years in November 2021 due to a military coup in the country in February. With the new military regime having declared a year-long state of emergency, IUCN concluded the political conditions in the Southeast Asian country are an impediment to the TRI Myanmar project's restoration plans and activities. This political upheaval follows the easing of COVID-19 restrictions that had delayed the finalization of the project execution agreement between IUCN and the Myanmar Forest Department in 2020. Though few activities could be executed following the coup, the TRI Myanmar project has successfully established numerous project activities since its conception.

Steps forward since initiation

In 2019, the TRI Myanmar completed the project launch with the full participation of the national and regional government departments. The team hosted ROAM workshops at the regional and township levels and coordinated closely with project partners, including the Myanmar Forest Department, the Nature Conservancy (TNC) and the Myanmar Environment Rehabilitation-Conservation Network. These workshops were attended by 432 participants from across NGOs, the private sector, local community members and more.

Building on prior national-level analysis, the ROAM assessment zeroed in on 29 areas covering just under 292 000 ha for FLR. The Restoration Initiative incorporates FLR approaches within its projects seeking to restore ecological functionality within a deforested or degraded forest while simultaneously enhancing human well-being. As part of this larger assessment, the TRI Myanmar project initiated two studies conducting a cost–benefit analysis of restoration options in six villages in the dry, central Sagaing Region. Plantations of *Sterculia versicolor* – a native tree that produces resin and an oil-rich seed used in cooking – stood out as having the highest potential for investment return. Other important aspects highlighted in the assessments included the importance of NTFPs, such as nuts, gums, mushrooms, fruits herbs, fish and wild game, to the forest communities of Myanmar, and the need for local laws to regulate unsustainable levels of non-commercial harvesting.

Accompanying the cost–benefit analysis of restoration efforts in the Sagaing Region were reports on plant and animal life, specifically a STAR assessment. The TRI Myanmar project and its partners followed up to determine which actions were necessary and at what scale to protect Myanmar's unique species. Together, these insights were incorporated into sustainable and effective annual management and restoration plans for the six project townships. As examples, activities planned included the restoration of the Asian elephant (*Elephas maximus*) habitat, tree seedling distribution to community forest user groups and increased forest surveillance and patrolling.

Developments during the COVID-19 pandemic

In 2020, the TRI Myanmar staff, having to work from home due to government directives in response to the COVID-19 pandemic, stayed active in advancing FLR approaches in Myanmar beginning with a signed partnership with TNC to support work that strengthens the policy environment in Myanmar. The TRI Myanmar project supported the Myanmar Restoration and Rehabilitation Programme and advocated directly for FLR and ROAM concepts to be included as national priorities and, furthermore, advocated for the formation of a National Working Group on Forest and Landscape Restoration.

Despite pandemic-related restrictions, members of the Myanmar Forest Department participated in a TRI-supported workshop on PES. With PES, landowners and farmers who participate receive financial incentives for managing their land in a way that ensures beneficial ecological services are supplied to the local people and ecosystem. This workshop resulted in the Myanmar Forest Department committing to an assessment of how PES could be used to support improved management of the Thapandzik watershed. The Thapandzik watershed and dam are the primary supply of water for over 200 000 ha of land used for rice paddy fields. The TRI Myanmar project was in the process of developing a proposal for this area that integrates a PES scheme.

A project steering committee was also established with the director general of the Myanmar Forest Department serving as chair.

The TRI Myanmar project supported the Myanmar Restoration and Rehabilitation Programme and advocated directly for FLR and ROAM concepts to be included as national priorities and, furthermore, advocated for the formation of a National Working Group on Forest and Landscape Restoration

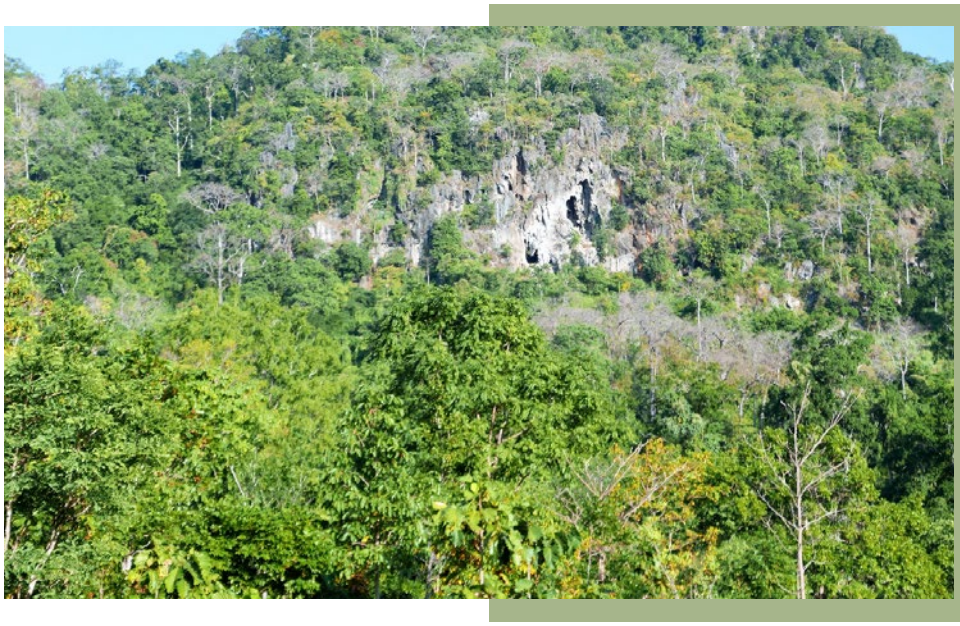
However, no formal meetings took place. Ultimately, the unfolding global health crisis meant on-the-ground restoration work was significantly delayed, including a pending implementation agreement between IUCN and the Myanmar Forest Department.

Recommencing on-the-ground operations

In 2021, the TRI Myanmar project was equipped to re-engage with the implementation of FLR and a spectrum of complementary activities that included the following: restorative agroforestry systems, supporting community forest user groups, enabling the assisted and natural regeneration of forests, biodiversity conservation, biological soil and water conservation measures, such as living fences and natural drainage, and creating elephant corridors – narrow paths of land that connect elephant habitats and help reduce animal fatalities.

The dramatic changes to the political climate in Myanmar have made TRI's operations within the country inadvisable. However, "should the project be allowed to continue, certain actions are front of mind," explains Bo Sann, Knowledge Management Specialist of TRI Myanmar. For example, the first actions could include a stakeholder and sensitivity analysis among the local communities residing within the project's six townships. The spread of civil war throughout the country may result in disdain for not only the military but also government departments and their initiatives, including the TRI Myanmar project. Additionally, it may be advantageous that initial priorities cover three key areas: the restoration of degraded forests exploited by illegal logging, promoting local participation in natural resources management and the bolstering of forest governance.

Importantly, communications and information materials about the TRI Myanmar project's efforts and a land-use change analysis have been produced and shared with partners and forest rangers during field trips to protected areas and in workshops. These materials include fliers, posters and the ROAM handbook – both English and Burmese versions – and are part of a larger knowledge management strategy to disseminate information about the project. Building familiarity and knowledge around FLR implementation and land-use changes will facilitate engagement and interest in FLR among stakeholders when the TRI Myanmar project is able to recommence its restoration efforts.

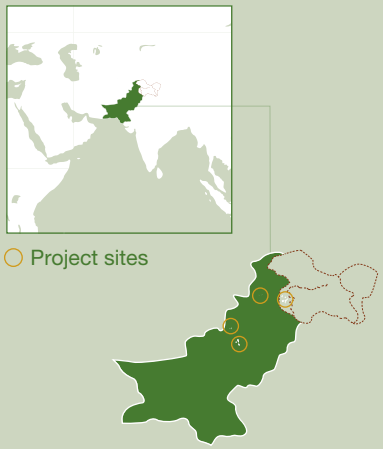


Batcave in Kanbalu Township. Photo credit: © Bo Lager and Htet Eain Khant.

PAKISTAN

Project updates and achievements

- The project distributed a total of 326 950 forest trees and 20 800 fruit trees across the four project sites, benefiting an additional 5 440 smallholder farmers (4 173 men, 1 267 women), and bringing 321 ha of land under restoration, including 24 ha of block plantation. Another 5 800 fruit trees and 96 750 forest trees were provided by the Balochistan and Khyber Pakhtunkhwa Forest and Wildlife Departments as an in-kind contribution to the project.
- The project has set up two chilgoza processing units in two districts to empower chilgoza forest communities, enhance their income by increasing the shelf-life of the commodity, create alternative job opportunities, especially for women, and involve local communities in chilgoza-related business, trade and local entrepreneurship.
- The project distributed 1 000 fuel-efficient stoves and 200 gasifiers to selected beneficiaries to help reduce pressure on wood resources for cooking and household purposes.
- The Chilgoza Forest Protection and Conservation Committees (CFPCCs) were provided with 300 chilgoza harvesting toolkits to promote the sustainable and safe collection of chilgoza pine nuts.
- The project trained 195 community members from the CFPCCs in tree plantation techniques.



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Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

View of degraded landscape in Pakistan. Photo credit: © Christophe Besacier.

A pine nut value chain is saving threatened chilgoza forests in Pakistan

The TRI Pakistan project is building capacity for local processing of chilgoza pine nuts in the country's northern regions. These actions are helping revitalize these cherished forests while protecting livelihoods.

The chilgoza pine forests of Pakistan span the dry temperate forests near the base of the Himalayan mountains. The trees produce an edible nut known for its creamy flavour that is highly valued and an important source of income for local communities. In recent years, demand for pine nuts has skyrocketed both locally and internationally, and Pakistan is now the third largest producer of pine nuts in the world after China and the Russian Federation. Unfortunately, this growing demand is coupled with poor forest management practices, which threaten the sustainability of the chilgoza forests of Pakistan, the production of pine nuts and community livelihoods.

Left unchecked, unsustainable harvesting feeds into a vicious cycle that keeps pine trees and other plant populations from recovering on their own – a process called natural regeneration. This in turn impacts the entire forest ecosystem and reduces the locals' ability to rely on the forest as a source of food for grazing livestock, fuel and other products, such as medicinal plants, mushrooms and honey. To address these challenges in a way that balances the well-being of local communities, the TRI Pakistan project is strengthening the pine nut value chain across four districts: Sherani in the Balochistan Province, Chillas in the Gilgit Baltistan Region, and Chitral and South Waziristan in the Khyber Pakhtunkhwa Province. This improved value chain better accounts for the harms of deforestation while reflecting the benefits of restoration. It also incentivizes improved management of these ecologically and socially important forests.

Creating economic opportunities

The TRI Pakistan project together with the Pakistan Forest Department is promoting an integrated management approach that teaches and enforces science-based management practices, the use of sustainable harvesting techniques and improved post-harvesting methods, which safeguard dwindling numbers of healthy pine trees. In 2020, the 14 CFPCCs – where communities play a participatory role in supporting the local management, protection and restoration of the forests – adopted measures that formed the foundation for the project's successes in 2021. The measures outlined sustainable amounts of pine cone harvesting within permitted seasons, banned large-scale commercial harvesting and established community monitoring and enforcement of regulations with fines for violations, such as the collection of unripe cones.

With a framework of good practices and enforcement in place, the TRI Pakistan project was able to establish two pine nut processing units in Sherani and Chitral in 2021, bringing the total to four installed by the project since inception. The processing units enable more efficient cleaning, grading, washing, drying,

Kalash woman sewing. Photo credit: © Christophe Besacier.

TRI Pakistan project is proving an excellent example of how enhancing people's well-being by supporting local livelihoods and providing a regular, continuous source of income creates interest to conserve and restore treasured landscapes.

roasting and packing of pine nuts, which increase the overall shelf-life of the pine nuts. They also empower forest users, create new job opportunities, especially for women, and incorporate more communities in chilgoza-related opportunities and trade. Ultimately, this self-sufficiency in the harvesting and post-harvesting process provides communities with long-term assurance regarding income and employment while incentivizing better management and protection of resources. It enables the communities to not only sustainably collect, roast, sort and pack pine nuts, but also build their capacity to access the national market directly. Direct access ensures locals capture a more substantial share of the revenue generated from pine nut sales than what has previously been possible.

The project's four processing units have been met with resounding support with just under 60 000 kg of pine nuts being processed in 2021. This production amounts to PKR 90 million (USD 513 000) earned across the districts, and due to high demand, the TRI Pakistan project now aims to establish four additional units. This acceptance highlights the potential for small-scale processing enterprises to play a larger role in the country's economic development.

Embedding regeneration into the value chain

In addition to enabling independent post-processing, the TRI Pakistan project is supporting natural regeneration by improving the management and collection of pine nuts. In the past, the chilgoza pine cones which house the pine nuts were crudely collected. Collectors would strip trees of entire branches or even worse, fell an entire tree to ensure every single cone was collected. This type of harvesting not only injures the tree, making natural regeneration more difficult, but it also impacts birds,

Edible seeds of Chilghoza Pine Nut (*Pinus gerardiana*) extracted from the cone. Photo credit: © Faizul BARI.

pollinators, and unique plants and animals, including the rare and endangered snow leopard (*Panthera uncia*), the Himalayan lynx (*Lynx lynx*) and the Kashmir markhor (*Capra falconeri*) – also known as the screw-horned goat – which rely on the forests for shelter and food.

In 2021, the TRI Pakistan project provided training and supplied 300 harvesting toolkits to promote less damaging cone collection at the earliest stages of the value chain. Each toolkit included a high-quality cone pruner, a safety belt, a helmet, gloves, hard-toe boots, climbing spikes, cone pickers and gum remover waxes. Using this equipment saves trees and branches from harm as the cones can be more easily detached. Importantly, these kits also make harvesting safer and have significantly reduced the number of human injuries and casualties. In 2018, 26 people were injured and five were killed harvesting chilgoza cones across all the districts. In 2021, only three injuries and one death were reported. Other support interventions included providing farmers with cone-cracking machines and the distribution of 1 000 fuel-efficient stoves and 200 gasifiers – low-cost stoves that produce fuel from agrowaste. The impact of these stoves and gasifiers in reducing demand for firewood harvested from the forest will be assessed in 2022.

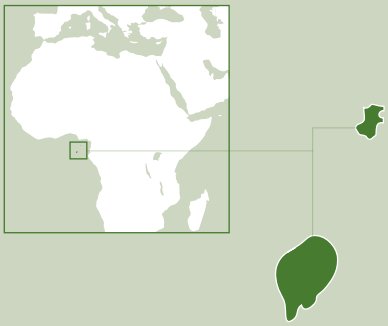
Even with these improvements, many uncertainties remain that could endanger the progress made in strengthening the pine nut value chain and restoring the chilgoza pine forests of Pakistan. These uncertainties include a poorly performing economy, limited research and technical advice, as well as inadequate marketing and an unreliable market. Additionally, moving beyond small-scale processing will require government support for improved infrastructure that alleviates constraints felt by farmers, equipment manufacturers and processors across the value chain. However, even with these unknowns, the TRI Pakistan project is proving an excellent example of how enhancing people's well-being by supporting local livelihoods and providing a regular, continuous source of income creates interest to conserve and restore treasured landscapes. The continued empowerment of local communities remains the crux of the project's success and is key to reviving the chilgoza pine forest ecosystems for generations to come.

Sun-drying pine seeds, Chilgoza forest. Photo credit: © Faizul BARI.

SAO TOME AND PRINCIPE

Project updates and achievements

- The project disseminated the National Restoration Plan and four FLR plans among forest users, including communities, decision-makers, civil society and more.
- The project commenced its on-the-ground FLR work in the four target landscapes with the aim of restoring approximately 30 000 ha of land.
- The project implemented a training course on law enforcement, inspection and deontology.
- The project contributed to the founding of four community projects that support NTFP value chains, specifically for wild honey and ground snails, on both islands.
- The project provided USD 87 000 in funding to seven sustainable small- and medium-sized bankable initiatives.
- The project established a connection with the TRI Guinea-Bissau project to exchange insights and approaches to mangrove restoration.



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View of Príncipe Natural Park. Photo credit: © Marco Pagliani.

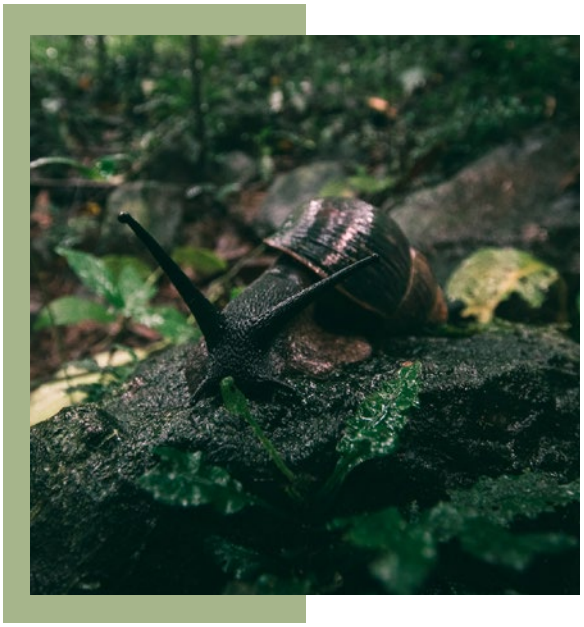
Linking forest conservation to profitable projects in Sao Tome and Principe

The TRI STP project is supporting entrepreneurs as they build sustainable businesses and create new value chains.

The forest ecosystems found on the tiny island state of STP are among the most ecologically rich and diverse in Africa. Located close to the equator in the Gulf of Guinea, the island is a treasure trove of trees, bushes and herbs, with some 10 per cent of the country's plants found nowhere else in the world.

Traditionally, local inhabitants rely on the country's rainforests for food, medicine and many other uses in their daily lives. Yet despite this familiarity, locals have only recently begun exploring forest-based businesses that utilize these foods, substances and other NTFPs. Commercial use of the forests of STP has historically been focused primarily on logging and timber extraction. Logging, however, has become unsustainable and trees do not have the chance to regenerate in a way that ensures the forest's overall health.

With forests under threat, the TRI STP project is supporting the creation of sustainable and profitable businesses to help diversify income away from unsustainable timber harvesting. These businesses utilize high-quality forest products, which include locally known delicacies, such as herbs, mushrooms and snails, to more well-known commodities such as honey, wild pepper, vanilla, ginger and other products that can be grown sustainably under the forest canopy. The vision for these business opportunities is to not only provide added incentives to protect forest resources but also to improve the well-being and material prosperity of forest user communities in STP.



Búzio, or the wild forest snail, is a much-sought delicacy in STP. Photo credit: © Vasco Pissarra.

Boosting sustainable businesses

The TRI STP project and its partners developed a unique funding scheme to help small- and mid-size bankable projects address the many structural barriers that limit the success and profitability of new forest-based businesses. These barriers include the private sector's weak involvement, lack of capital from banks because of their unfamiliarity with these types of ventures, as well as logistical problems faced by small enterprises, communities and cooperatives. Businesses interested in sustainable management, forest restoration or agroforestry, struggle to secure loans, microcredits and other fiscal incentives.

To find proposals and participants, the TRI STP project and partners put out a public call in 2021, which was advertised on the radio and in bulletins. Within six months, the TRI STP project team collected and screened 39 applications, homing in on seven promising ones. Upon selection, each beneficiary went through a short e-learning and coaching process led by specialists to strengthen the proposal's overall profitability. This involved a joint review of each initiative's financial and business sustainability, and, if necessary, amendments. In addition to the consultation and the provision of contracts, the project opened new bank accounts for the beneficiaries, where they, in turn, deposited a matching contribution of at least 10 per cent of the total capital provided by the TRI STP project. Overall, the scheme has invested USD 87 000, allocating between USD 5 000 and USD 15 000 per sustainable venture.

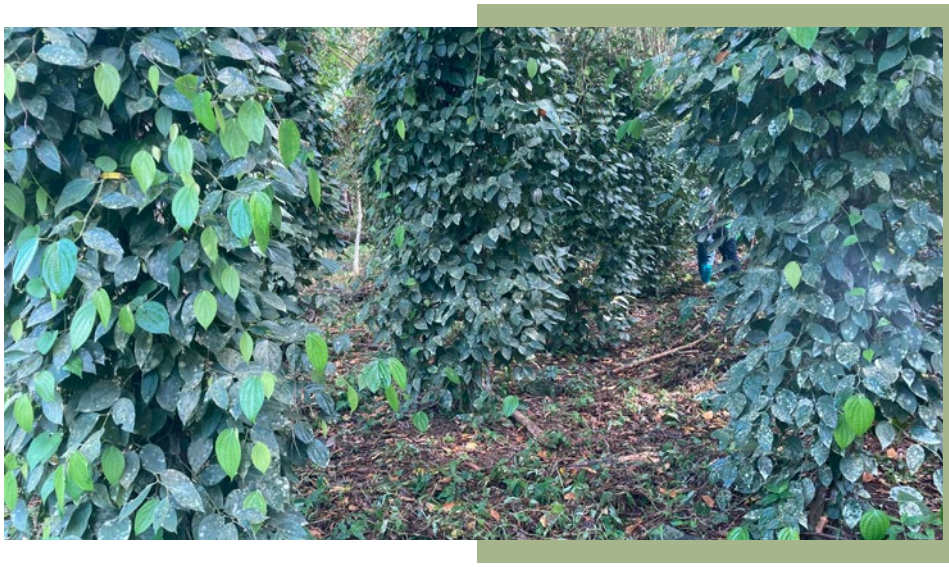
The TRI STP project's investments will help boost a responsible economy founded on forest restoration, conservation and sustainable management on these remarkable islands.

The spectrum of initiatives

All the funded initiatives are still in the early stages and are led by entrepreneurs, small businesses and NGOs. The Directorate of Forests and Biodiversity, the TRI STP project's main national counterpart, is monitoring each initiative. The initiatives fall across a spectrum with varying degrees of novelty:

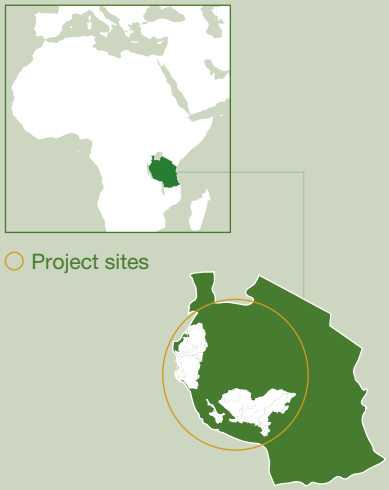
- One entrepreneur will look at the processing of essential oils for aromatherapy and for hydrolates, a by-product of the essential oil-making process. Hydrolates can be added to cosmetics and personal hygiene products, or even included in food products.
- Another initiative is looking at the production of fuel-efficient stoves for cooking to reduce the use of firewood while improving health and hygiene conditions. These stoves are to be distributed free of charge to rural households while creating national know-how on building these valuable devices.
- A further initiative aims to boost local employment for women, specifically via the set-up of agrotourism and ecotourism facilities, such as small-scale ecolodges and botanic gardens.
- Coco Express, a project by 35-year-old Abdulay de Sousa Pereira Rosa, will supply fresh coconut water to the national market. He will then use the by-products of coconut processing to produce compost and organic bags for growing seedlings in tree nurseries.

The TRI STP project is hopeful that these funded initiatives will not only lay a path for other local entrepreneurs to follow, but further link the local economy to sustainable forest management while meeting the growing demand for top-tier forest products. If the economic activities launched through this scheme thrive and attract the attention of business investors, the TRI STP project's investments will help boost a responsible economy founded on forest restoration, conservation and sustainable management on these remarkable islands.



Organic wild pepper plantation, Príncipe. Photo credit: © Marco Pagliani.

UNITED REPUBLIC OF TANZANIA



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Degraded river banks due to unsustainable agriculture along Katuma River. Photo credit: © IUCN.

The Restoration Initiative United Republic of Tanzania project to begin vital restoration work in 2022

After a delayed start, the TRI United Republic of Tanzania project is preparing a full launch of crucial restoration activities across the Great Ruaha and Lake Rukwa landscapes.

The United Republic of Tanzania has rightly earned its title as the jewel of East Africa. It boasts a splendid natural heritage as one of the world's most biodiverse countries with well-known landmarks such as Mount Kilimanjaro, the Ngorongoro Crater, the Serengeti National Park and Lake Tanganyika. The country is teeming with unique wildlife hosting 33 per cent of African plant species and 20 per cent of African large mammals, including the critically endangered black rhino (*Diceros bicornis*). However, overgrazing, deforestation, demand for land and unsustainable agricultural practices are increasingly turning healthy landscapes in the United Republic of Tanzania into wastelands, threatening a loss estimated at USD 10.2 billion per year. Water pollution is worsening and the country's plants and animals are being lost. Today, more than 50 per cent of the country's total land area is affected by land degradation with 16 per cent classified as highly degraded.

The full implementation of the TRI United Republic of Tanzania project is an important step towards investing in nature – a key pillar of the Tanzanian economy, which has long been underfunded. In late 2021, government representatives– both local and national – gathered in the city of Mbeya to discuss results from the TRI United Republic of Tanzania project's just completed ROAM assessment and prepare for launch after delays, including those from COVID-19. The participants shared a conviction that the TRI United Republic of Tanzania project should improve food security, bolster ecotourism and livelihoods. They unequivocally articulated a vision of stopping both land degradation and an impending

TRI United Republic of Tanzania project will employ an ecosystem management approach, which addresses the actions of humans as part of the entire ecosystem

downward spiral of the Tanzanian economy, which has been driven by unsustainable resource use.

Facing the predicament, the government representatives reaffirmed a commitment to bring 110 000 ha under restoration in partnership with the TRI United Republic of Tanzania project. The project's scope will build upon the results of the ROAM, which identified just over 87 000 ha of land for sustainable forestry, livestock grazing and improved cropland management, and another 23 000 ha for other restoration activities. It is estimated that 100 000 households across seven districts will stand to directly benefit from the TRI United Republic of Tanzania project.

The TRI United Republic of Tanzania project will employ an ecosystem management approach, which addresses the actions of humans as part of the entire ecosystem, rather than looking at environmental issues and species as separate from societies. The project will focus on two severely degraded landscapes and basins of Great Ruaha and Lake Rukwa, removing the basin of the Malagarasi River from the project's original scope. The removal of the Malagarasi River basin enables the project committee to make more targeted investments of available resources.

The Great Ruaha River basin in the United Republic of Tanzania is home to the country's Great Ruaha River, which flows through wetlands, and the Ruaha National Park – home to one of the continent's largest populations of African lions (*Panthera leo*).[15] The landscape has been plagued by increasingly long dry spells, and these challenges this places on the local ecosystem are compounded by increased farming demands and poor irrigation infrastructure. Great Ruaha and the Lake Rukwa basins support the country's third largest fishery[16] and are part of the ecosystem supporting nearby game reserves and important conservation areas, like the Katavi National Park. A lack of water governance and unsustainable land-use practices are limiting the growth of nearby districts and threatening wildlife and plant life, similar to what has been happening within the Great Ruaha River basin.[17] "[We expect] the project will contribute to restoring highly degraded areas of Great Ruaha and Lake Rukwa basins to secure [the] flow of multiple ecosystem services, and enhanced resilient economic development and community livelihoods," says Hassan Chande, Deputy Minister, of the Vice-President's Office (Union Affairs and the Environment).

The TRI United Republic of Tanzania project working with its partners is paving a clear path to apply the ecosystem management approach, which will help restore these vital areas to not only meet current and immediate needs with sustainable land-use practices, but also to enable the conservation of rare plants, animals and the supporting ecosystems. With implementation, the project begins the process of building new opportunities to help further establish nature as a key pillar of the economy and improve the lives of people living in the United Republic of Tanzania.

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17 Elisa, M., Gara J.I. & Wolanski, E. 2010. A review of the water crisis in Tanzania's protected areas, with emphasis on the Katuma River–Lake Rukwa ecosystem. Ecohydrology & Hydrobiology, 10(2–4): 153–165. https://doi.org/10.2478/v10104-011-0001-z

GENERATION RESTORATION

THE RESTORATION INITIATIVE IS EDUCATING A NEW GENERATION OF ENVIRONMENTALLY SAVVY LEADERS AS THEY SET OUT TO SAVE THE PLANET

The Restoration Initiative is supporting a new generation of young leaders as they bring about concrete changes that advance sustainability and put the planet's health first.

The triple threat of biodiversity loss, deforestation and climate change is shaping a new generation of environmentally savvy pioneers looking to restore balance with the natural world. These motivated young people are shouldering the burden of making amends for the harm caused by unrestrained growth driven by their parents' and grandparents' generations. Generation restoration is inheriting a planet in desperate need of saving. To propel this generation forward as they move society towards transformative change, TRI is advancing improved school curricula, socially and environmentally driven entrepreneurship and hands-on learning. The Restoration Initiative's approach is to integrate and establish interventions around sustainability and restoration principles that engage this generation's holistic and collaborative perspective.

View of degraded landscape in Pakistan. Photo credit: © Christophe Besacier.

EDUCATION THAT VALUES RESTORATION AND ADVANCES SUSTAINABILITY

Education on the value of natural resources, and forests in particular, has been the cornerstone of TRI since its inception. This instruction has been accompanied by applicable knowledge about the ongoing process of FLR, in which ecosystems regain their function and the well-being of humans living within these ecosystems is improved. These efforts are not only implemented at the programme level but within TRI country projects, which are then tailored to the specific landscape and community contexts: the DRC, the CAR and Guinea-Bissau are providing examples of how education that values restoration and advances sustainability is being uniquely incorporated.

In 2021, the TRI DRC project finalized awareness campaigns on FLR targeted for implementation in 2022. These campaigns are designed specifically for secondary, technical and professional teaching institutions and universities. Two universities, the Université Évangélique en Afrique and the Université Catholique de Bukavu, have already committed to facilitating these campaigns as the TRI DRC project continues its restoration work. The Université Évangélique en Afrique and the TRI DRC project have formalized an agreement to prepare specialized brochures on how to best integrate the FLR curriculum into universities, and primary and secondary schools. The next step is to elevate these actions by embedding FLR curricula in the national education programme. This is a step currently being discussed with the pilot project for the restoration and sustainable management of the mountainous agricultural ecosystems of South Kivu (RGEM) project, a key restoration partner.

Efforts are indeed underway to produce academic materials on the FLR process designed to reach local communities as well as university students. Course chapters relating to FLR will be integrated into the established curricula, and an accompanying booklet in the two chiefdoms of Ngweshe and Kabare will also be produced. For pupils in the South Kivu Province, a theatre play, games and a comic strip on FLR in local languages will be produced.

The TRI CAR project has also been working closely with research and academic training institutions – the Institut Centrafricain de la Recherche Agronomique (ICRA) and the Institut Supérieur de Développement Rural (ISDR) – to advance the valuation of ecosystem services through higher education. Doing so will not only promote awareness of the importance of intact forests but will also explore the most enticing economic incentives to preserve them. The institutes have selected two PhD candidates and four master's candidates (three per institute) who are submitting research protocols to produce evaluations of the environmental services provided by agrobiodiversity. Agrobiodiversity, in the broadest sense, refers to a variety of living organisms that contribute to food and agricultural productivity.[18] Other research protocols will look at the soils found in savannah landscapes and dense forest zones. Both institutions have committed to supervising the thesis work of the students.

The TRI Guinea-Bissau project has developed a school curriculum on the importance and benefits of healthy mangrove ecosystems. The manual was prepared for teachers and helps build awareness and support for protecting these spectacular trees and the variety of life found living within them. They also highlight the ecosystem services provided by mangrove forests, such as their ability to prevent erosion, provide habitat and breeding ground for commercial fish, as well as provide sources of fuel and timber for construction.

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INNOVATION FOR RESTORATION

Generation restoration's mindset demonstrates not only a raised consciousness that reconsiders humanity's relationship with the Earth but also a desire to transform today's societies and ensure a healthy and just planet for all. These young leaders are inventive and the programme's efforts are helping scale their innovative ideas into profitable business plans centred on restoration. For example, TRI has supported entrepreneurs from the DRC, Kenya and seven other country projects, via participation in the e-learning programme, the Restoration Factory. Developed by UNEP in partnership with IUCN, FAO and the social enterprise Bridge for Billions, the Restoration Factory helps entrepreneurs develop enticing business models that incorporate NbS. The Restoration Factory enhances participants' ability to further develop these profitable business plans as they continue their entrepreneurial journey.

The TRI STP project's work in 2021 is in a similar vein. The TRI STP project provided USD 87 000 in funding to seven sustainable small- to medium-sized bankable initiatives. The project not only helps close the investment gap but provides e-learning and online coaching sessions to strengthen the overall profitability of the initiatives. This intervention supports the entrepreneurial minds of this generation as they build businesses, create new value chains and support their communities.

V. Mé-Chinho. Photo credit: © Rosa Colomer.

LEARNING WHILE DOING

The Restoration Initiative also integrates interventions that allow generation restoration to learn while doing. This includes a six-week course on FLR approaches and concepts as part of Yale University's Environmental Leadership and Training Initiative. Since 2020, young people from the sub-Saharan African countries of Cameroon, CAR, DRC, Kenya and the United Republic of Tanzania have participated in these training opportunities, bringing new perspectives from their diverse backgrounds. Through their participation, these young global changers build their capacity and develop new strategies for integrating FLR and protecting forest landscapes.

Other interventions that educate youth through hands-on learning have been integrated into the TRI Kenya ASAL project and the TRI DRC project. The TRI Kenya ASAL project held training sessions and webinars leading up to the National Landscape Restoration Scaling Conference in 2021, which specifically focused on generation restoration, and how to best capitalize on youth engagement in ecosystem restoration.

And the TRI DRC project is taking great care to support young farmers as they swap their monoculture crops for agroforestry, in which they integrate trees and shrubs into their croplands. Engaging with young farmer associations ensures these individuals have sufficient knowledge and resources to incorporate and profit from FLR approaches. The TRI DRC project and its partners are also developing microprojects, specifically for the young farmers within generation restoration.

Beyond this, in May 2022, participation in the XV World Forestry Congress, the world's largest gathering on forests, will offer another great hands-on opportunity for generation restoration's young professionals. Participants from TRI country projects will attend the event in Seoul, Republic of Korea, where they will engage with governments, academia, the private sector and civil society on how to build a green, healthy and resilient future with forests at the centre. The participation of generation restoration in such large and established events integrates them as part of a growing global network working to protect the planet, and allows them to exchange and learn from leading sustainability experts and thought leaders.

The TRI programme will continue its efforts to support generation restoration by ensuring that as many young people as possible are able to build their education, livelihoods and professions around ecosystem restoration. Globally and within TRI country projects, education on FLR, the role of intact ecosystems in securing benefits to humans and the establishment of profitable yet sustainable initiatives integrate the programme into the UN Decade on Ecosystem Restoration (2021–2030). More importantly, however, is that the knowledge gained is not just tailored to the restoration challenges ahead, but rather establishes a foundation of lifelong commitment and engagement to protecting the planet and our collective future.

Training farmers on plantation establishment and management in Akomnyada village, Mbalmayo landscape of Cameroon. Photo credit: © Fogoh John Muafor.

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